



'Unlocking powerful knowledge to understand the world around us'

Science is a creative subject which enables students to discover the wonders of the universe for themselves.

Our overall aim is for every student to realise their potential and become life long learners in science irrespective of race, gender, background or ability.

Our Vision:

- To ensure that our students are engaged in their Science education experience through enquiry based learning.
- To develop skills that enable students to understand the world around them and to become informed citizens in Science.
- Develop skills to evaluate and make informed judgements about issues that will affect them at a personal and global level.
- Use their knowledge and skills in applied situations.
- Understand and assess risks involved in everyday life.
- To see Science as relevant to their lives and providing many career opportunities. Link career options to learning science skills/knowledge required for A level/university.
- Create opportunities to contribute to the school and local community.
- Provide opportunities for students to build collaboration and communication skills in Science.
- Support the development of independent study skills, such as how to revise.
- Identify cross-curricular links across the department, for example with the Maths department so we can improve students' confidence to use Maths in Science.
- Celebrate students success when they achieve in their Science education.
- Provide students with the opportunities to extend their Science learning through explicit 'go further' opportunities in Science. This includes providing extra-curricular activities such as in-house visitors and external visits



KS3 Science Curriculum Overview (Year 7 & 8)

At KS3 we follow the national curriculum. KS3 topics have been designed in such a way to allow logical teaching and are separated into biology, chemistry and physics. In KS3, pupils experience how to use standard scientific lab equipment, chemicals and basic practical skills with health and safety. The experiment based teaching foster curiosity and enjoyment in science. Foundation skills at KS3 enables them to step into KS4.

YEAR 7

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Particles Elements and Chemical reactions		Cells and Human Body 1 Energy and Matter		Variation and classification Light and sound	
KEY CONCEPTS	Hazards, lab equipment, three states of matter, pressure and diffusion Atom, elements, molecules, compounds and mixtures, periodic table, acids, alkalis and indicators, metals and non-metals, reactions and recording observations Experiment based teaching		Microscope, plants and animal cells, single celled organisms, specialised cells, cell organelles and their function, organ systems, muscles, skeletal system, digestive system, reproductive system, balanced and non-balanced diet Teaching using models, videos and microscope Energies, convection and radiation, Sankey diagrams, renewable and non-renewable energy resources, energy calculations		Seven life processes, types of variations, adaptations, selective breeding, classification, vertebrates, biodiversity, identifying plants and animals Teaching using videos, pictures and exploring nature Waves, speed of light, how we see things, reflection, refraction, colours of light, what is sound, speed of sound Independent research/ practical based	
ASSESSMENT	Assessment at the end of topic Skills Assessment end of Term 2		Assessment at the end of topic Skills Assessment end of Term 4		Skills assessment at the end of term 6 End of year Assessment	



YEAR 8

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Electricity & magnetism Energy and ecosystem		Chemistry skills Human Body 2		Forces Earth and atmosphere	
KEY CONCEPTS	<p>Symbol for electrical equipment, series and parallel circuit, measuring current, potential difference, resistance and power, equations and calculations, unit of measurement, magnets and magnetic force, magnetic fields, making electromagnets</p> <p>Experiment based teaching</p> <p>Plant reproduction, photosynthesis, function of stomata, aerobic and anaerobic respiration, fermentation, bioaccumulation, fertilisers, fungicides, pesticides, food chains and food webs, pyramids of numbers</p>		<p>Revising periodic table, atoms, elements, compounds and mixtures, metals and non-metals, experiment based investigation</p> <p>Recap on digestive system, nutrients and balanced diet, food tests, energy in food, consequences of imbalanced diet, respiratory system, how smoking, alcohol, drugs affects health, heart diseases</p> <p>Experiment, models and video based teaching</p>		<p>Earth's atmosphere, climate change, global warming, greenhouse effect, types of rocks, sedimentary, metamorphic and igneous, rock cycle</p> <p>Solar system, luminous and non-luminous objects, shadows, how days, months and years occur, seasons, phases of moon, solar and lunar eclipse, satellites and communication, beyond solar system</p>	
ASSESSMENT	<p>Assessment at the end of topic</p> <p>Skills Assessment end of Term 2</p>		<p>Assessment at the end of topic</p> <p>Skills Assessment end of Term 4</p>		<p>Research based project on space</p> <p>Skills assessment at the end of term 6</p> <p>End of year Assessment</p>	

Enrichment Activities

In KS3, we have a science club for Year 7 & 8 pupils to experience application of science hands on activities in a fun way. Pupils are rewarded for their excellent attitude to learning and achievements by sending them to school trips and workshops. Pupils are provided with various opportunities to learn science and its applications outside the book through various in house workshops, outside school trips to labs as well as museums.



KS4 Biology Curriculum Overview (Year 9, 10 & 11)

GCSE Biology is studied in Years 9, 10 and 11. We follow the AQA Biology specification which is an exciting and interesting course that explores many aspects of the living world around us such as: microbiology, immunity, ecology, genetics, life processes and many more. The course is designed to be engaging as well as provide pupils with knowledge and skills. The knowledge that the students learn are applied in a variety of contexts preparing them for not only higher education but their life in the 21st Century.

YEAR 9

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Cell Biology	Animal Organisation	Animal Organisation	Plant Organisation	Infection and Response	Bio-energetics
KEY CONCEPTS	An overview of the different types of cells how they reproduce and how they become specialised We also look at how material can enter and leave the cell	An overview on how organs and organ systems in animals are organised with an in-depth look at the digestive and cardiovascular systems	We then look at "lifestyle" diseases that can affect these systems as well as preventative actions and treatments	An overview of how organs and organ systems are organised in plants with particular focus on the leaves, xylem, phloem and roots	A study of how animals and plants can be attacked by pathogens with a detailed focus on some key diseases. How organisms can defend themselves from this	An in-depth study on biochemical reactions and what can affect them
ASSESSMENT	Exam questions End of topic test	Exam questions	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test End of year PPE



YEAR 10

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Homeostasis and Response	Inheritance	Revision	Variation and Evolution – part 1	Variation and Evolution – part 2	Revision/ practicals
KEY CONCEPTS	We learn how the human body maintains a delicate balance of various factors for optimum function as well as how we detect and respond to the world around us. We also learn how plants control their growth	We learn the structure of DNA and how it is passed on to offspring. We then develop this knowledge to understand how gender is determined and how characteristics, including genetic diseases, are passed on	We will spend this term preparing for the PPE and then once it is completed we will review it	We study an overview of evolution – how it happens, what causes it and the evidence that supports it. We then compare and contrast this with selective breeding before then looking at cloning and antibiotic resistance. Finally we look at classifying living things	We study an overview of evolution – how it happens, what causes it and the evidence that supports it. We then compare and contrast this with selective breeding before then looking at cloning and antibiotic resistance. Finally we look at classifying living things	We spend this term revising for the end of year PPE and catching up on any required practicals that have been missed
ASSESSMENT	Exam questions End of topic test	Exam questions End of topic test	Exam questions PPE	Exam questions	Exam questions End of topic test	Exam questions End of year PPE



YEAR 11

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Ecology – part 1	Ecology – part 2	Revision	Revision	Revision	
KEY CONCEPTS	<p>A study of the living world around us</p> <p>How energy and matter is transferred along food webs and the interdependence of living things</p>	<p>We now look at how humans can influence this delicate balance of living things with topics such as environmental destruction, pollution and the effects of farming/ fishing</p> <p>Finally we look at how we can avoid and even repair the damage we have caused to the planet and the role that biotechnology can play in this</p>				
ASSESSMENT	Exam questions	Exam questions End of topic test PPE	Exam questions PPE	Exam questions	Exam questions Walking talking mocks	



KS4 Chemistry Curriculum Overview (Year 9, 10 & 11)

YEAR 9

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	C1 Atomic Structure The Periodic Table		C4 Chemical changes		C6 Rate and extent of chemical reaction	
KEY CONCEPTS	History of the atomic model, structure of the atom, sub-atomic particles Electronic configuration Ions and ionic formulae Patterns in the periodic table, groups and periods The alkali metals, halogens and noble gases Reactions of alkali metals and halogens Simple balanced chemical equations		Acids, alkalis and bases Neutralisation and reactions of acids Further balanced chemical equations Standard solutions and concentration (g/dm^3) The reactivity series Reactions of metals with oxygen, water and acids REDOX (oxidation and reduction) Extracting metals from their ores Electrolysis and ionic equations A_r and M_r and % element in a compound		Factors affecting the rate of a reaction Collision theory and activation energy Calculating the rate of a reaction Catalysts Reversible reactions and equilibrium Factors affecting equilibrium and Le Chatelier's principle	
ASSESSMENT	Assessment at the end of topic		Assessment at the end of topic Required Practical 8 – 'Making a soluble salt' Required Practical 9 – 'Electrolysis of solutions'		Assessment at the end of topic Required Practical 11 – 'Investigate how changes in concentration affect the rate of reaction'	



YEAR 10

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	C2 Structure and Bonding		C3 Quantitative Chemistry		C5 Energy changes in reactions C7 Organic Chemistry	
KEY CONCEPTS	<p>Chemical bonds, ionic, covalent and metallic</p> <p>How substances and structure are related to the properties of substances</p> <p>Structure and bonding of carbon</p>		<p>Foundation: Consolidation of basics mostly covered in Y9 (conservation of mass, balanced equations, Ar, Mr, % element in a compound and concentration g/dm^3 (moles not needed F) Also general maths skills</p> <p>Higher: as above PLUS mole, reacting masses, limiting reactants, concentration mol/dm^3</p>		<p>Exothermic and endothermic reactions</p> <p>Reaction profiles</p> <p>Calculating energy change of reactions (HT only)</p> <p>Crude oil, hydrocarbons and alkanes</p> <p>Fractional distillation and petrochemicals</p> <p>Properties of hydrocarbons</p> <p>Cracking and alkenes</p>	
ASSESSMENT	Assessment at the end of topic		Assessment at the end of topic		<p>Required Practical 10 – ‘Temperature change in reactions’</p> <p>Assessment at the end of topic</p>	



YEAR 11

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	C8 Chemical Analysis C9 Chemistry of the Atmosphere		C10 Using Resources			
KEY CONCEPTS	Purity, formulations and chromatography Identification of common gases Composition and evolution of the Earth's atmosphere Carbon dioxide and methane as greenhouse gases Common atmospheric pollutants and their sources		Using the Earth's resources and sustainable development Potable water and waste water treatment Alternative methods of extracting metals Life cycle assessment and recycling			
ASSESSMENT	Required Practical 12 – 'Paper Chromatography' Assessment at the end of topic		Required Practical 13 – 'Analysis and purification of water' Assessment at the end of topic			

Please note that this is the hoped route, there are likely to be significant changes due to COVID-19 school closures/limitations.

Current Y9 and 10 have NOT followed this route, this is the proposed route for the Y9s starting GCSE in September 2021. Y10 and Y11 will follow the previous route.



KS4 Physics Curriculum Overview (Year 9, 10 & 11)

YEAR 9

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Heat and Energy I	Forces and Motion I	Electricity Generation	Current Electricity	Elastic Materials	Staying Afloat
KEY CONCEPTS	Conduction Convection Radiation Insulation Energy Transfer Efficiency	Vectors and Scalars Speed Motion Graphs Newton's Laws Weight and Mass Terminal Velocity	Fossil Fuels Renewable Energy Cost Benefit Analysis	Electric Current Resistance Ohm's Law Non-Ohmic Conductors Thermistors and LDRs	Hooke's Law Elastic Potential Energy	Density Floating and Sinking Upthrust
ASSESSMENT	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of topic test PPE



YEAR 10

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Sound, Light and Seismic Waves	The Electro-magnetic Spectrum	Forces and Motion II	Heat and Energy II	Mains Electricity	Astronomy and Cosmology
KEY CONCEPTS	Waves Sound and the Ear Ultrasound and Sonar Earthquakes Reflection and Refraction Colours	Lenses Uses and Dangers of the Electro-magnetic Spectrum Earth's Temperature and Greenhouse Effect	Moments Momentum Vector Diagrams Impulse Stopping Distances	Work Done Gravitational Potential Energy Kinetic Energy Internal Energy Specific Heat Capacity Specific Latent Heat Pressure and Gas Laws	Alternating Current Wiring a Plug Fuses	Life Cycle of a Star Satellites Doppler Effect The Origin of the Universe
ASSESSMENT	Exam questions End of topic test	Exam questions End of topic test	Exam questions PPE	Exam questions End of topic test	Exam questions End of topic test	Exam questions End of Year Exam



YEAR 11

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Radioactivity	Fields	Electromagnetism	Revision	Revision	
KEY CONCEPTS	Theories of the Atom Atomic Radiation Half Life Nuclear Energy and Fission Nuclear Fusion	Magnetic Fields Compasses Electric Fields Static Electricity	Fields around a Conductor Motor Effect Electromagnetic Induction Transformers The National Grid			
ASSESSMENT	Exam questions	Exam questions End of topic test PPE: Paper 1 and Paper 2	Exam questions End of topic test	Exam questions PPE: Paper 1 and Paper 2	Exam questions Walking talking mocks	



KS5 Biology A level Curriculum Overview (Year 12 & 13)

A level Biology is studied in Years 12 and 13. We follow the AQA specification which looks at a wide range of biological topics. This course provides the gateway to further study of Biology at University or many fields of work where the knowledge and skills developed can be applied in a work setting.

At Little Heath School the course is taught by two members of the Biology team. Half of the content is covered by one member of staff while the other half is taught by the second. The material is taught in parallel.

YEAR 12: Teacher A

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Biological Molecules	Biological Molecules	Organisms Exchange Substances with their Environment	Organisms Exchange Substances with their Environment	Revision	Energy Transfers in and between Organisms
KEY CONCEPTS	We take an in-depth review of the structure of a range of molecules such as carbohydrates, lipids and proteins. We then develop this knowledge by looking at their biological importance	We take an in depth view of DNA and the process of it's replication. We also look at the biological importance of water and some selected inorganic ions	An overview on how organisms exchange substances with their environment with a detailed view on the specifics of the digestive and respiratory systems	We undertake a detailed study of the mass transport systems in animals and plants		We partake of a detailed study into the biochemical processes of photosynthesis and respiration
ASSESSMENT	Exam questions Require Practical 1 Term 1 introductory test	Exam questions Required Practical 5 End of unit test	Exam questions	Exam questions End of unit test	Exam questions End of year test (PPE)	Exam questions Required Practical 7 and 8



YEAR 12: Teacher B

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Cells	Cells	Genetic Information, Variation and Relationships between Organism	Genetic Information, Variation and Relationships between Organism	Revision	Genetics, Populations, Evolution and Ecosystems
KEY CONCEPTS	We undertake a study in the structure and various features of different kinds of cells. We then study how these different types of cells can reproduce	Using the material from term 1 we then look at how material can pass between cells and the roll of the immune system	We look at the structure and role of DNA in living organisms. We then look at how it replicates and is passed on to the next generation. In this process we especially look at how it gives rise to variation and the befits that this brings the species	We study how species are identified and organised. We then look at diversity; why it matters and how it is measured		We study inheritance in the form of genetic crosses and how this is relevant to a species as a whole
ASSESSMENT	Exam questions Required Practical 2 Term 1 introductory test	Exam questions Required Practical 3 and 4 End of unit test	Exam questions Required Practical 6	Exam questions End of unit test	Exam questions End of year test (PPE)	Exam questions



YEAR 13: Teacher A

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Energy Transfers in and between Organisms	Energy Transfers in and between Organisms	The Control of Gene Expression	The Control of Gene Expression	Revision	Revision
KEY CONCEPTS	We study what can affect the rate of photosynthesis and respiration and how this impacts on living organisms	We then look at how nutrients are cycled and the effects that this has not only on living things but also on human process such as farming	We take an in-depth study of how genes are expressed and how this process is controlled. We then look at how this process can go wrong; leading to conditions such as cancer	We then study how the process of gene expression can be used in various gene technologies and the applications that they can be put to		
ASSESSMENT	Exam questions Required Practical 9 Term 7 introductory test	Exam questions End of unit test	Exam questions January PPE	Exam questions End of unit test	Exam questions Walking talking mock	Exam questions



YEAR 13: Teacher B

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Genetics, Populations, Evolution and Ecosystems	Genetics, Populations, Evolution and Ecosystems	Organisms Respond to Changes in their Internal and External Environment	Organisms Respond to Changes in their Internal and External Environment	Revision	Revision
KEY CONCEPTS	Using the knowledge from the previous term; we take a detailed study at the process of evolution	Using our knowledge of evolution we look at how it can effect populations of a species	We study how simple organisms can respond to the world around them before taking an in-depth look at nerve transmission and how the heart is controlled	We study how the body's internal environment is maintained and take a detailed view of how specific factors are controlled		
ASSESSMENT	Exam questions Required Practical 10 Term 7 introductory test	Exam questions Required Practical 11 and 12 End of unit test	Exam questions January PPE	Exam questions End of unit test	Exam questions Walking talking mock	Exam questions



KS5 Chemistry A level Curriculum Overview (Year 12 & 13)

YEAR 12

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Elements of Life (EL) Organic/ Physical Inorganic/ Physical	Developing Fuels (DF) Elements from the Sea (ES)	Developing Fuels (DF) The Ozone Story (OZ)	What's in a Medicine (WM)	Revision	NMR (¹³ C and ¹ H) PAG12
KEY CONCEPTS	<p>O/P: Atomic structure and M_r, Simple nuclear equations, Spectroscopy and Electronic configuration, Calculations E = hn and c = λν, Covalent bonding; Ions, Metallic bonding</p> <p>P/I: Moles, PAG 1 – using moles, Balancing equations and reacting masses, Periodicity, Groups 1 & 2, Acid/Base reactions, Concentration, standard solutions and titration, PAG 2 – Acid base titration</p>	<p>DF: Enthalpy, PAG 3, bond breaking/ making calculations, fractional distillation, cracking, basic polymerisation, Catalysis, Alkanes, Alkenes, Electrophilic Addition, Ideal gas law, Isomerism, Emissions</p> <p>ES: Halogens and reactions, REDOX, half equations and balancing redox equations, Electrolysis, Equilibrium and K_c calculations, Risk/Benefit analysis, redox titrations, Hydrogen Halides, Identifying unknown substances</p>	<p>DF: See Term 2</p> <p>OZ: Atmosphere and calculations involving gases</p> <p>Electromagnetic spectrum</p> <p>Homolytic /heterolytic fission, radicals</p> <p>Rate</p> <p>Homogeneous catalysis</p> <p>CFCs and intermolecular bonds</p> <p>Haloalkanes and nucleophilic substitution</p> <p>PAG 5b</p> <p>Synthesis of halogenoalkane and use of separating funnel</p>	<p>Drug, medicine, poison</p> <p>Alcohols and ethers, isomerism</p> <p>Reactions of alcohols</p> <p>Carboxylic acids</p> <p>Esterification</p> <p>Synthesis of salicylic acid and aspirin (PAG 6) – Theory before Y12 exams, practical after</p> <p>-OH group in alcohols, phenols and carboxylic acids</p> <p>Infrared spectroscopy</p> <p>Mass spectrometry</p> <p>Jigsaw puzzle of chemical analysis</p>	<p>WM ESQ after revision over holiday</p> <p>OZ ESQ after revision over holiday</p>	<p>PL4 Activities and EQs</p> <p>Recap MS and IR</p> <p>The chemical analysis jigsaw</p> <p>Spectroscopy in a suitcase masterclass</p> <p>How much Mn in a nail</p> <p>Part 1 - follow instructions to get Mn containing solution</p> <p>Part 2 - Research and Plan how to use colorimetry to investigate</p> <p>Part 3 - Focus on % error calculations</p>
ASSESSMENT					PPE Exams H033/01 and H033/02 both 1½ hours	



YEAR 13

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Chemical Industry (CI)	Polymers and Life (PL) Oceans (O)	PPE Revision Colour by Design (CD) Developing Metals (DM)		Revision	
KEY CONCEPTS	<p><i>Rate and Order:</i></p> <p>Make sure PAG 9 completed</p> <p>Rate equation</p> <p>Order of reaction</p> <p>Calculations and units</p> <p>PAG 10</p> <p>Synthesis, reacting masses, atom economy and % yield recap</p> <p><i>N₂ cycle, REDOX and Equilibrium:</i></p> <p>Group 5 chemistry</p> <p>N_xO_y gases</p> <p>REDOX of N₂ cycle</p> <p>Equilibrium</p>	<p>PL: Recap alcohol, carboxylic acid, ester chemistry</p> <p>Amines and amides</p> <p>Amino acids and proteins</p> <p>Optical isomerism</p> <p>DNA</p> <p>Enzymes and inhibitor mechanisms</p> <p>Instrumentation</p> <p>O: Acid-Base chemistry</p> <p>Strong/weak acid/alkali and calculations</p> <p>Buffers</p> <p>PAG 11</p> <p>Ksp</p> <p>Atmosphere, climate change and greenhouse effect</p> <p>Entropy</p>	<p>CD: Colour</p> <p>Benzene and aromatic compounds</p> <p>Electrophilic substitution</p> <p>Azo compounds</p> <p>Attaching dyes to fabrics</p> <p>Fats and oils</p> <p>TLC/GLC</p> <p>Aldehydes/Ketones and nucleophilic addition</p> <p>Organic synthesis</p> <p>PAG 7</p> <p>DM: The d-block and transition metals</p> <p>Catalysis</p> <p>Colour</p> <p>Complexed</p> <p>Colorimetry</p> <p>REDOX and equations</p> <p>Electrochemistry</p> <p>PAG 8</p> <p>Rusting and protection</p>		Exam technique	
ASSESSMENT	CI test before half term	O test before Christmas PL test after Christmas			Examinations	



KS5 Physics A level Curriculum Overview (Year 12 & 13)

YEAR 12

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Fundamentals of Physics / Current and Charge	Vectors, Scalars and Forces / Electrical Circuits	Kinematics / Resistance and EMF	Newton's Laws and Energy / Waves	Materials / Quantum Physics	Periodic Motion
KEY CONCEPTS	Mathematical Skills Estimating Vectors and Scalars Errors Charge Kirchhoff's First Law Drift Velocity	Vector Diagrams Resolving Moments Density Archimedes Principle Electromotive Force Potential Difference Resistivity Power	Speed Acceleration SUVAT Equations Free Fall Resistors Internal Resistance Potential Dividers	Newton's Laws of Motion Momentum Impulse Conservation of Energy Polarisation Refraction Total Internal Reflection Interference Young's Double Slit Experiment Stationary Waves	Hooke's Law Stress and Strain Young Modulus Photons Photoelectric Effect Wave-Particle Duality Electron Diffraction	Circular Motion Simple Harmonic Motion Resonance
ASSESSMENT	Practical Assessment End of topic test	Practical Assessment End of topic test	Practical Assessment End of topic test	Practical Assessment End of topic test	Practical Assessment End of topic test	Practical Assessment End of topic test PPE



YEAR 13

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Thermal Physics / Capacitance	Gas Laws / Electric Fields	Gravitational Fields / Magnetic Fields	Astrophysics / Nuclear Physics	Cosmology / Medical Physics	
KEY CONCEPTS	Internal Energy Specific Heat Capacity Specific Latent Heat Capacitors Charging and Discharging Energy in Capacitors	Ideal Gas Law Boltzmann's Law Coulomb's Law Uniform Electric Fields Electric Potential	Newton's Law of Gravitation Gravitational Potential Orbits Magnetic Flux Motion of Charged Particles in a Magnetic Field Electromagnetism	Star Life Cycle Hertzsprung-Russell Diagram Energy Levels and Photon Emission Fundamental Forces Quarks Half Life Equations Fission and Fusion	Origin of Universe Hubble's Law Dark Matter X-Rays Medical Tracers Ultrasound Revision	
ASSESSMENT	Practical Assessment End of topic test	Practical Assessment End of topic test	Exam questions End of topic test PPE: Paper 1 and Paper 2	Practical Assessment End of topic test	Practical Assessment End of topic test PPE: Papers 1, 2 and 3	



KS5 BTEC National Extended Certificate in Applied Science Curriculum Overview (Year 12 & 13)

BTEC Applied Science is studied in Years 12 and 13. We follow the Pearson Level 3 Specification which means the course is worth a full A-level. The course aims to teach pupils a range of scientific skills which they can then take into industry or into further education at university. We aim to teach our pupils how to critically think and to problem solve.

YEAR 12

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	Chemistry Applications of Science Digestive System coursework	Biology and Chemistry Applications of Science	Biology and Physics Applications of Science Chromatography coursework	Physics Applications of Science Colourimetry coursework	Titration coursework Investigation Skills Unit 1 Revision	Titration coursework Plants
KEY CONCEPTS	U1 Chemistry: The periodic table and atomic structure U8 Digestive system: The normal function, disorders associated with it and physical and psychological treatments	U1 Biology: Cells and tissues	U1 Physics: Waves and communication U2 Chromatography: How to complete complex chromatography, how to write a report in the scientific method and its use in industry	U2 Chromatography: How to create dilutions, how to calculate concentrations, how to write a report	U2 Titrations: Calculate concentrations, how to write a report U3 Investigation skills: teaches pupils the scientific method to be used in 5 areas, statistical data analysis and problem solving	U3 Plants: Plan, investigate and analyse data on 2 experiments to do with plant survival
ASSESSMENT	Digestive system coursework submission and resit	End of unit test for Chemistry	End of unit test for Biology Chromatography coursework submission and resit U2 Professional development - chromatography submission	End of unit test for Physics Unit 1 PPE		Real exam for U1 first attempt Titration and colourimetry coursework submission and resit U2 Professional development – titration and colourimetry submission



YEAR 13

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	<p>Cooling Curves</p> <p>Enzymes and Diffusion</p>	<p>Cooling Curves</p> <p>Fuels and Circuits</p>	<p>Lymphatic System and Musculoskeletal system coursework</p>	<p>Lymphatic System and Musculoskeletal system coursework</p> <p>Professional development coursework</p>	<p>Revision for resits unit 1 and unit 3</p>	<p>Revision for resits unit 1 and unit 3</p>
KEY CONCEPTS	<p>U2 Cooling Curves: How to determine changes of state, how to write a report in the scientific method and its use in industry</p> <p>U3 Enzymes: Plan, investigate and analyse data on 2 experiments to do with industrial uses of enzymes</p>	<p>U3 Fuels: Plan, investigate and analyse data on 2 experiments to do with energy in fuels</p>	<p>U8 Lymphatic and Musculoskeletal System: Understanding the normal function, disorders associated with the systems and physical and psychological treatments</p>	<p>U2 Professional development coursework: Pupils must review the skills they have learnt, strengths and weaknesses and the communication skills in relation to the chromatography, colourimetry, titration and cooling curves coursework</p>		
ASSESSMENT		<p>Cooling Curves coursework submission and resit</p> <p>Unit 2 Professional development – cooling curves submission</p>	<p>Real exam for unit 3 first attempt</p>	<p>Unit 8 Lymphatic System and Musculoskeletal system coursework submission and resit</p> <p>Unit 2 Professional development final submission and resit</p>	<p>PPE's</p> <p>Past Papers</p> <p>Analysing areas of improvement by going through papers from the first attempt.</p>	<p>Resits for unit 1 and 3 final attempt</p>



KS5 BTEC Level 3 Health and Social Care Curriculum Overview (Year 12 & 13)

This is a double subject that allows students to explore the real life issues that surround health and social care. Students learn about health care which encompasses all hospital activities, medical nursing homes and GP services. They also learn about the social care sector which includes, residential nursing and care facilities, domiciliary care and social work. Students can progress into this work sector through degree programmes in nursing, midwifery, social work, physiotherapy and occupational therapy (to name a few)! There are more than 300 distinct career paths in this sector.

YEAR 12

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	U1 - Human Lifespan Development	U2 - Working in Health and Social Care	U14 – Physiological Disorders and their Care	U19 – Nutritional Health	Preparation for unit 1 and /or 2 exam resits if necessary	U5 Part 1 – Meeting Individual Needs
KEY CONCEPTS	External examined unit Growth and development during the human lifespan; the life stages from infancy to later adulthood. Psychological, physical, emotional and intellectual development, and how predictable and unpredictable life events can affect a person's development	External examined unit This unit is split into social care and health care. The sub units explore professionals, their roles and responsibilities, the structure of NHS, the importance of safe practices including infection control and health and social legislation	Internal Assessment – assignment Different physiological disorders are explored; research on signs and symptoms, diagnosis methods, types of treatment and the type of care practices available. Care plans are designed, these also include a report that identifies the individual needs of the service user and they could be met	Internal Assessment – assignment Key concepts include: Analysis of dietary intake Planning professional dietary plans for people with individual needs Health conditions related to dietary deficiencies	Same as term 1 and 2 The focus will be on the exam paper/ script from the exam board (from the January exam) which will allow self reflection and revision to be focussed on particular areas for improvement	Internal Assessment – assignment Assessment of case studies exploring different health and social care needs and how they can be managed Key concepts include: Emotional, social and behavioural disorders Physical disorders and disabilities Communication barriers and how to overcome these
ASSESSMENT	End of topic exam questions for each sub unit PPE and revision in preparation for the official January exam		Students complete Task 1 & 2 of this assignment brief First submission is internally assessed and then feedback is given Students have 15 working days to amend/recraft their work		PPE and revision sessions focussed on particular sub-sections of each unit The resits will take place during the summer exam period	Students complete Task 1 and 2 of this assignment brief First submission is internally assessed, feedback given with 15 working days to amend/recraft their work



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	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
TOPIC	U5 Part 2 – Meeting Individual Needs	U7 – Safe Practices in Health and Social Care	U8 – Part A Promoting Public Health	U4 – Current Research in Health and Social Care	U4 – Current Research in Health and Social Care	U8 – Part B Promoting Public Health
KEY CONCEPTS	<p>Assess the individual needs of the service users presented in the two case studies selected</p> <p>Key areas: Emotional, social and behavioural disorders and disabilities</p> <p>Physical disorders and disabilities</p> <p>Communication barriers and how to manage or overcome these</p> <p>Professionals required to support the needs identified</p>	<p>Key areas include:</p> <p>Infection control in health and social care, including domiciliary care</p> <p>Legislation to protect service users and service providers</p> <p>Risk assessments in health and social care</p>	<p>Key areas include:</p> <p>History of public health including the formation of the NHS</p> <p>Public health strategies past and present</p>	<p>Part A – Analysis and research of HSC articles</p> <p>Students explore current research in health and social care, carry out secondary research into the article they have chosen from Part A to prepare for the Part B paper</p> <p>Previous topics have included:</p> <p>Using video games to reduce episodic schizophrenia</p> <p>Reduction of eosinophil levels with new asthma drug trials</p> <p>Social housing for people with disabilities</p>	<p>Preparation for Part B PPE including use of Part A – analysis and research</p> <p>Part B – written PPE</p> <p>3 hour exam including 4 essay style questions</p>	<p>Students will use their knowledge from Term 3 to complete Task 3 of their assignment</p> <p>Key areas:</p> <p>Analysis of public health demographics, including pandemics and epidemics</p> <p>Evaluating public health strategies currently in place</p> <p>The future of public health</p>
ASSESSMENT	<p>Internal Assessment – assignment.</p> <p>Students complete Task 1 & 2 of this assignment brief.</p> <p>First submission is internally assessed and then feedback is given. Students have 15 working days to amend/recraft their work.</p>			<p>Weekly mini assessments to revise key concepts</p> <p>PPE –Part A – analysis of articles and secondary research</p> <p>Part B consists of the 3 hour controlled assessment</p>	<p>April – Part A released</p> <p>Analysis of official articles</p> <p>May – Part B Official Unit 4 exam</p>	<p>Internal Assessment – assignment</p> <p>Task 1 & 2</p> <p>First submission is internally assessed, feedback given with 15 working days to amend/recraft their work</p>