

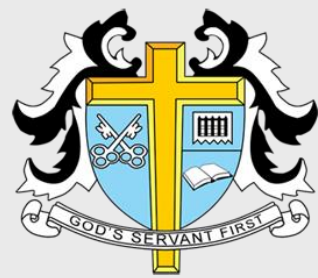
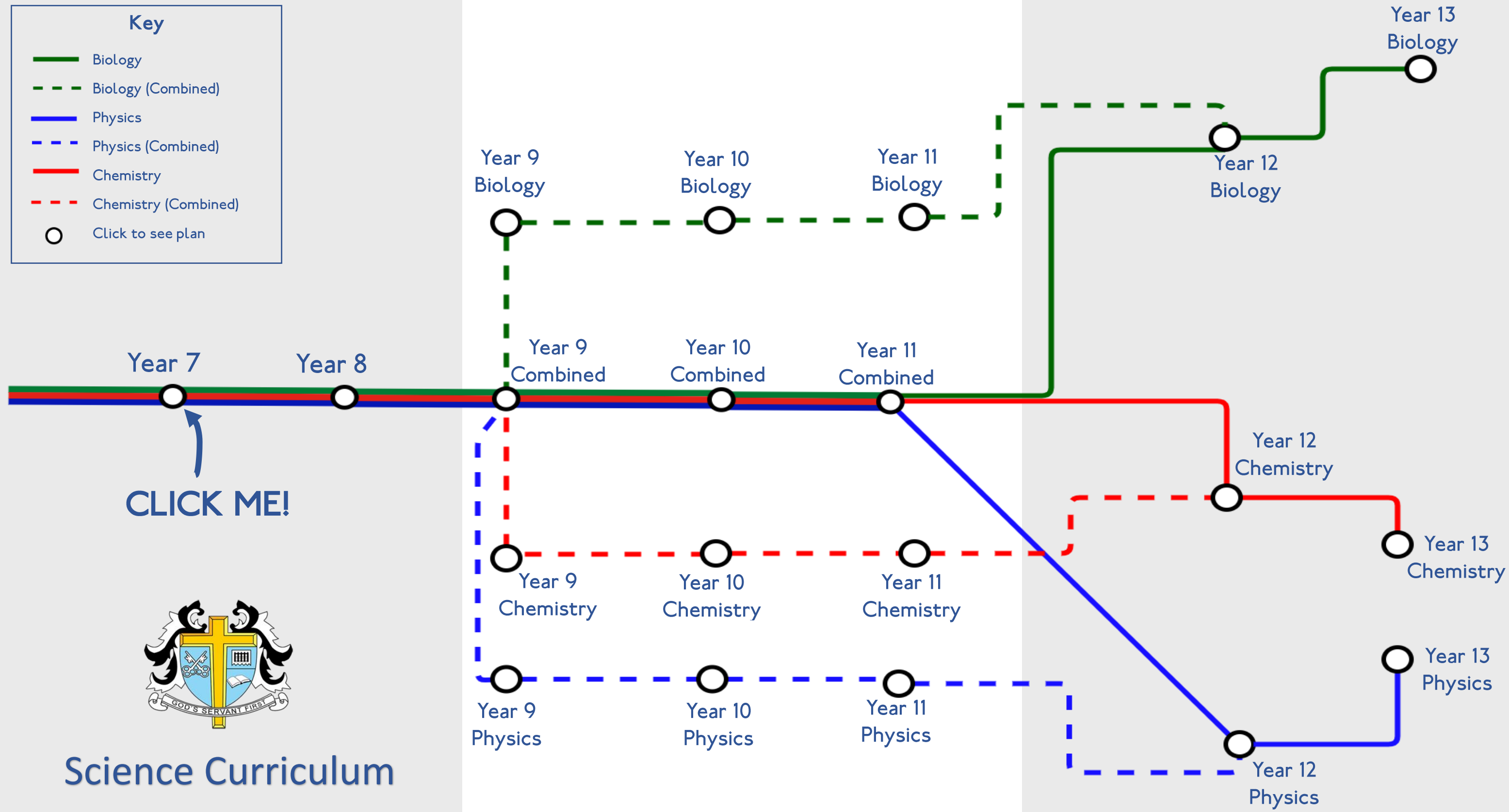
KS3

KS4

KS5

Key

- Biology
- Biology (Combined)
- Physics
- Physics (Combined)
- Chemistry
- Chemistry (Combined)
- Click to see plan



Science Curriculum

St Thomas More High School



Term	Autumn	Spring	Summer
Units	<p>B1.1: Cells B1.1.1 Observing cells B1.1.2 Plant and animal cells B1.1.3 Specialised cells B1.1.4 Movement of substances B1.1.5 Unicellular organisms</p> <p>C1.1 Particles and their behaviour C1.1.1 The particle model C1.1.2 States of matter C1.1.3 Melting and freezing C1.1.4 Boiling C1.1.5 More changes of state C1.1.6 Diffusion C1.1.7 Gas pressure</p> <p>P1.1 Forces P1.1.1 Introduction to forces P1.1.2 Squashing and stretching P1.1.3 Drag forces and friction P1.1.4 Forces at a distance P1.1.5 Balanced and unbalanced</p>	<p>B1.2: Structure and function of body systems B1.2.1 Levels of organisation B1.2.2 Gas exchange B1.2.3 Breathing B1.2.4 Skeleton B1.2.5 Movement: joints B1.2.6 Movement: muscles</p> <p>C1.2 Elements, atoms, and compounds C1.2.1 Elements C1.2.2 Atoms C1.2.3 Compounds C1.2.4 Chemical formulae</p> <p>P1.2 Sound P1.2.1 Waves P1.2.2 Sound and energy transfer P1.2.3 Loudness and pitch P1.2.4 Detecting sound P1.2.5 Echoes and ultrasound</p> <p>P1.3 Light P1.3.1 Light P1.3.2 Reflection P1.3.3 Refraction P1.3.4 The eye and the camera P1.3.5 Colour</p>	<p>B1.3: Reproduction B1.3.1 Adolescence B1.3.2 Reproductive systems B1.3.3 Fertilisation and implantation B1.3.4 Development of a fetus B1.3.5 The menstrual cycle B1.3.6 Flowers and pollination B1.3.7 Fertilisation and germination B1.3.8 Seed dispersal</p> <p>C1.3 Reactions C1.3.1 Chemical reactions C1.3.2 Word equations C1.3.3 Burning fuels C1.3.4 Thermal decomposition C1.3.5 Conservation of mass C1.3.6 Exothermic and endothermic</p> <p>C1.4 Acids and alkalis C1.4.1 Acids and alkalis C1.4.2 Indicators and pH C1.4.3 Neutralisation C1.4.4 Making salts</p> <p>P1.4 Space P1.4.1 The night sky P1.4.2 The Solar System P1.4.3 The Earth P1.4.4 The Moon</p>
National Curriculum topics:	Cells and organisation The particulate nature of matter Forces Balanced forces Forces and motion	The skeletal and muscular systems Gas exchange systems Atoms, elements, and compounds Pure and impure substances Observed waves Sound waves Energy and waves Light waves	Reproduction Chemical reactions Space physics
	Through the content across all three disciplines, students are taught about: Scientific attitudes, Experimental skills and investigations, Analysis and evaluation, and Measurement		
Assessments	Baseline Test c. 19/09/22 Checkpoint tests after each unit AO1 Exam covering all terms content c. 28/11/22	Checkpoint tests after each unit AO2 Exam covering all terms content c. 13/03/23	Checkpoint tests after each unit AO3 Exam covering all terms content c. 10/07/23
	There are 4 graded assessments through the school year. In Year 7 students can achieve grades ranging from WT- (Working towards) to 22+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. Other “Checkpoint” test will take place these will not be graded but will be used to identify strengths and areas for development. Your son will be given individualised tasks to support or extend.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



KS3 Science – Y8			
Term	Autumn	Spring	Summer
Units	<p>B2.1 Health and lifestyle B2.1.1 Nutrients B2.1.2 Food tests B2.1.3 Unhealthy diet B2.1.4 Digestive system B2.1.5 Bacteria and enzymes in digestion B2.1.6 Drugs B2.1.7 Alcohol B2.1.8 Smoking</p> <p>C2.1 The Periodic Table C2.1.1 Metals and non-metals C2.1.2 Groups and periods C2.1.3 The elements of Group 1 C2.1.4 The elements of Group 7 C2.1.5 The elements of Group 0</p> <p>P2.1 Electricity and magnetism P2.1.1 Charging up P2.1.2 Circuits and current P2.1.3 Potential difference P2.1.4 Series and parallel P2.1.5 Resistance P2.1.6 Magnets and magnetic fields P2.1.7 Electromagnets P2.1.8 Using electromagnets</p>	<p>B2.2 Ecosystem processes B2.2.1 Photosynthesis B2.2.2 Leaves B2.2.3 Plant minerals B2.2.4 Chemosynthesis B2.2.5 Aerobic respiration B2.2.6 Anaerobic respiration B2.2.7 Food chains and webs B2.2.8 Disruption to food chains and webs B2.2.9 Ecosystems B2.2.10 The carbon cycle B2.2.11 Climate change</p> <p>C2.3 Separation techniques C2.2.1 Mixtures C2.2.2 Solutions C2.2.3 Solubility C2.2.4 Filtration C2.2.5 Evaporation and distillation C2.2.6 Chromatography</p> <p>P2.3 Energy P2.2.1 Food and fuels P2.2.2 Energy adds up P2.2.3 Energy and temperature P2.2.4 Energy transfer: particles P2.2.5 Energy transfer: radiation P2.2.6 Energy resources P2.2.7 Energy and power P2.2.8 Work, energy, and machines</p>	<p>B2.3 Adaptation and inheritance B2.3.1 Competition and adaptation B2.3.2 Adapting to change B2.3.3 Variation B2.3.4 Continuous and discontinuous B2.3.5 Inheritance B2.3.6 Natural selection B2.3.7 Extinction</p> <p>C2.3 Metals and acids C2.3.1 Acids and metals C2.3.2 Metals and oxygen C2.3.3 Metals and water C2.3.4 Metal displacement reactions C2.3.5 Extracting metals C2.3.6 Ceramics C2.3.7 Polymers C2.3.8 Composites</p> <p>P2.3 Motion and pressure P2.3.1 Speed P2.3.2 Motion graphs P2.3.3 Pressure in gases P2.3.4 Pressure in liquids P2.3.5 Pressure on solids P2.3.6 Turning forces</p>
National Curriculum topics:	Nutrition and digestion Gas exchange systems Health The Periodic Table Current electricity Static electricity Magnetism	Nutrition and digestion Photosynthesis Cellular respiration Relationships in the ecosystem Earth and atmosphere Pure and impure substances Calculation of fuel uses and costs in the domestic context Energy changes and transfers Changes in systems	Inheritance, chromosomes, DNA, and genes Material Chemical reactions Describing motion Forces Pressure in fluids Forces and motion
	Through the content across all three disciplines, students are taught about: Scientific attitudes, Experimental skills and investigations, Analysis and evaluation, and Measurement		
Assessments	Checkpoint tests after each unit AO4 Exam covering all terms content c. 28/11/22	Checkpoint tests after each unit AO5 Exam covering all terms content c. 20/03/23	Checkpoint tests after each unit AO6 Exam covering all terms content c. 10/07/23
	There are 3 graded assessments through the school year. In Year 8 students can achieve grades ranging from WT (Working towards) to 32+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. Other “Checkpoint” test will take place these will not be graded but will be used to identify strengths and areas for development. Your son will be given individualised tasks to support or extend.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



Combined Specification: https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF			
Term	Autumn	Spring	Summer
TEACHER A Units Started in these terms may continue into next (Exam Spec Ref)	C1.1 - Atoms and periodic table C1.1.1 Atoms, elements & compounds (5.1.1) C1.1.2 Making compounds (5.1.1) C1.1.3 Mixtures (5.1.1) C1.1.4 Balancing equations (5.1.1) C1.1.5 Development model of atom (5.1.1) C1.1.6 Atomic structure (5.1.1) C1.1.7 Atomic and mass number (5.1.1) C1.1.8 Electronic structure (5.1.1) C1.1.9 The periodic table (5.1.2) C1.1.10 Metals and non-metals (5.1.2) C1.1.11 Group 0 (5.1.2) C1.1.12 Group 1 (5.1.2) C1.1.13 Group 7 (5.1.2) C1.1.14 Relative Formula mass (5.1.1) C1.1.15 Chromatography (5.1.1) C1.1.16 Distillation (5.1.1) P1.1 - Energy Transfer P1.1.1 Introduction to Physics GCSE P1.1.2 Changes in energy stores (6.1.1) P1.1.3 Conservation of energy (6.1.2) P1.1.4 Energy and work (6.5.2) P1.1.5 Gravitational PE stores (6.1.1) P1.1.6 Kinetic and elastic stores (6.1.1) P1.1.7 Energy dissipation (6.1.2) P1.1.8 Energy and efficiency (6.1.2) P1.1.9 Electrical appliances (6.2.4) P1.1.10 Energy and power (6.1.1) P1.1.11 Conduction and convection (6.1.2) P1.1.12 Heating & insulating building (6.1.2) P1.1.13 Energy Demands (6.1.3) P1.1.14 Energy from wind and water (6.1.3) P1.1.15 Energy from sun and Earth (6.1.3) P1.1.16 Energy and the environment (6.1.3)	C1.2 - Bonding and structure C1.2.1 Chemical bonds (5.2.1) C1.2.2 Ionic bonding (5.2.1) C1.2.3 Ionic compounds (5.2.2) C1.2.4 Covalent bonds (5.2.1) C1.2.5 Giant covalent compounds (5.2.3) C1.2.6 Allotropes of carbon (5.2.3) C1.2.7 Metallic bonding (5.2.1) C1.2.8 Metals and alloys (5.2.2) C1.2.9 Changes of state (5.2.2) C1.2.10 Polymers (5.2.2) C2.9 - Chemistry of atmosphere C2.9.1 Recap (5.1) C2.9.2 Levels of O ₂ and CO ₂ in the atmosphere (5.9.1) C2.9.3 Earth's early atmosphere (5.9.1) C2.9.4 Greenhouse gases (5.9.2) C2.9.5 Human activities & the GHE (5.9.2) C2.9.6 Global climate change (5.9.2) C2.9.7 Carbon footprint (5.9.2) C2.9.8 Atmospheric pollutants (5.9.3) C2.9.9 Properties and effects of atmospheric pollutants (5.9.3)	P1.3 - Particle model P1.3.1 Density (6.3.1) P1.3.2 RP: Density & Practical (6.3.1) P1.3.3 RP: Density Analysis & Eqs (6.3.1) P1.3.4 States of matter (6.3.1) P1.3.5 Changes of state (6.3.1) P1.3.6 Internal energy (6.3.2) P1.3.7 Specific heat capacity (6.3.2) P1.3.8 RP: SHC Demo & Practical (6.3.2) P1.3.9 RP: SHC Analysis and EQs (6.3.2) P1.3.10 Specific latent heat (6.3.2) P1.3.11 Multistep eqs practice P1.3.12 Gas pressure & temperature (6.3.3) C1.5 - Energy Changes C1.5.1 Recap (5.2) C1.5.2 Balancing equations Recap (5.1.1) C1.5.3 Exothermic and endothermic reactions (5.5.1) C1.5.4 RP4: Temperature changes (5.5.1) C1.5.5 Reaction profiles (5.5.1) C1.5.6 The energy change of reactions HT (5.5.1)
TEACHER B Units Started in these terms may continue into next (Exam Spec Ref)	B1.1 - Cell Biology B1.1.1 Microscopy (4.1.1) B1.1.2 Magnification and resolution (4.1.1) B1.1.3 Types of microscopes (4.1.1) B1.1.4 RP1 Microscopy (4.1.1) B1.1.5 Animal and plant Cells (4.1.1) B1.1.6 Eukaryotic & prokaryotic cells (4.1.1) B1.1.7 Orders of magnitude (4.1.1) B1.1.8 Cell specialisation (4.1.1) B1.4 – Systems B1.4.1 Levels of organisation (4.2.1) B1.4.2 Digestive system (4.2.2) B1.4.3 Food groups (4.2.2) B1.4.4 RP4 Qualitative food tests (4.2.2) B1.4.5 Proteins, catalysts & enzymes (4.2.2) B1.4.6 Factors on enzyme action (4.2.2) B1.4.7 Digestive enzymes (4.2.2) B1.4.8 Making digestion efficient (4.2.2) B1.4.9 RP5 Enzymes (4.2.2) B1.4.10 Metabolism and the Liver (4.4.2) B1.4.11 Blood (4.2.2) B1.4.12 Blood vessels (4.2.2) B1.4.13 The heart (4.2.2) B1.4.14 Circulation (4.2.2) B1.4.15 Helping the heart (4.2.2)	B1.3 – Disease B1.3.1 Pathogens and disease (4.3.1) B1.3.2 The spread of disease (4.3.1) B1.3.3 Viral Diseases (4.3.1) B1.3.4 Bacterial diseases (4.3.1) B1.3.5 Fungal and protist diseases (4.3.1) B1.3.6 Human defence response (4.3.1) B1.3.7 Vaccination (4.3.1) B1.3.8 Antibiotics and painkillers (4.3.1) B1.2 - Bioenergetics B1.2.1 Photosynthesis (4.4.1) B1.2.2 The rate of photosynthesis (4.4.1) B1.2.3 How plants use glucose (4.4.1) B1.2.4 Making the most of photosynthesis HT (4.4.1) B1.2.5 RP6 Photosynthesis (4.4.1) B1.2.6 Aerobic respiration (4.4.2) B1.2.7 Anaerobic respiration (4.4.2) B1.2.8 The response to exercise (4.4.2) B1.2.9 Fermentation (4.4.2)	B1.5 – Medical B1.5.1 Discovering drugs (4.3.1) B1.5.2 Developing drugs (4.3.1) B1.5.3 Health (4.2.2) B1.5.4 CHD (4.2.2) B1.5.5 Smoking (4.2.2) B1.5.6 Diet and Exercise (4.2.2) B1.5.7 Alcohol (4.2.2) B1.5.8 Mitosis and the cell cycle (4.1.2) B1.5.9 Cancer (4.2.2) B1.5.10 Stem cells and therapeutic cloning (4.1.2) B1.5.11 Ethics of Stem cells (4.1.2)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two weeks prior to the exam date. In Year 9 students can achieve grades ranging from WT (Working towards) to 66+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



Combined Science Specification: https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF			
Term	Autumn	Spring	Summer
<p>TEACHER A</p> <p>Units Started in these terms may continue into next (Exam Spec Ref)</p>	<p>C2.9 - Chemistry of atmosphere</p> <p>C2.9.01 Recap C1.1 (5.1)</p> <p>C2.9.02 Gases in the atmosphere (5.9.1)</p> <p>C2.9.03 Earths early atmosphere (5.9.1)</p> <p>C2.9.04 Greenhouse gases (5.9.2)</p> <p>C2.9.05 Human activities & the GHE (5.9.2)</p> <p>C2.9.06 Global climate change (5.9.2)</p> <p>C2.9.07 Carbon footprint (5.9.2)</p> <p>C2.9.08 Atmospheric pollutants (5.9.3)</p> <p>C2.9.09 Properties and effects of atmospheric pollutants (5.9.3)</p> <p>C2.6 Rates of Reaction</p> <p>C2.6.01 Recap C1.1 (5.1)</p> <p>C2.6.02 Calculating rates of reactions (5.6.1)</p> <p>C2.6.03 Interpreting ROR graphs (5.6.1)</p> <p>C2.6.04 Effect of temperature on RoR (5.6.1)</p> <p>C2.6.05 Effect of concentration on RoR (5.6.1)</p> <p>C2.6.06 Effect of surface area on RoR (5.6.1)</p> <p>C2.6.07 Catalysts (5.6.1)</p> <p>C2.6.08 RP5: Rates of reaction (5.6.1)</p> <p>C2.6.09 Collision theory & activation energy (5.6.1)</p> <p>C2.6.10 Reversible reactions (5.6.2)</p> <p>C2.6.11 Equilibrium (5.6.2)</p> <p>C2.6.12 Le Chatelier's principle HT (5.6.2)</p> <p>P2.5a Forces</p> <p>P2.5a.01 Vectors and scalars (6.5.1)</p> <p>P2.5a.02 Forces between objects (6.5.1)</p> <p>P2.5a.03 Resultant forces (6.5.1)</p> <p>P2.5a.04 Centre of mass (6.5.1)</p> <p>P2.5a.05 The parallelogram of forces HT (6.5.1)</p> <p>P2.5a.06 Resolution of forces HT (6.5.1)</p> <p>P2.5a.07 Forces and elasticity (6.5.3)</p> <p>P2.5a.08 RP: Hooke's law Practical (6.5.3)</p> <p>P2.5a.09 RP: Analysis and EQs (6.5.3)</p>	<p>C2.10 Using resources</p> <p>C2.10.01 Recap C1.2</p> <p>C2.10.02 Using Earths resources (5.10.1)</p> <p>C2.10.03 Potable water (5.10.1)</p> <p>C2.10.04 RP8: Water purification (5.10.1)</p> <p>C2.10.05 Wastewater treatment (5.10.1)</p> <p>C2.10.06 Alternative ways to extract metals HT (5.10.1)</p> <p>C2.10.07 Lifecycle assessments (5.10.2)</p> <p>C2.10.08 Reducing the use of resources (5.10.2)</p> <p>C1.4 Chemical Change</p> <p>C1.4.01 Recap C1.2</p> <p>C1.4.02 Metal oxides (5.4.1)</p> <p>C1.4.03 The reactivity series (5.4.1)</p> <p>C1.4.04 Extraction and reduction of metals (5.4.1)</p> <p>C1.4.05 Oxidation and reduction in terms of electrons HT (5.4.1)</p> <p>C1.4.06 Acids and metals (5.4.2)</p> <p>C1.4.07 Metal carbonates (5.4.2)</p> <p>C1.4.08 Neutralisation and salt production (5.4.2)</p> <p>C1.4.09 Soluble salts (5.4.2)</p> <p>C1.4.10 RP1: Making salts from an insoluble oxide or carbonate (5.4.2)</p> <p>C1.4.11 pH scale and neutralisation (5.4.2)</p> <p>C1.4.12 Strong and weak acids HT (5.4.2)</p> <p>C1.4.13 Electrolysis (5.4.3)</p> <p>C1.4.14 Metal extraction using electrolysis (5.4.3)</p> <p>C1.4.15 Electrolysis of aqueous solutions HT (5.4.3)</p> <p>C1.4.16 RP3: Electrolysis (5.4.3)</p>	<p>P2.5b Motion</p> <p>P2.5b.01 Speed and distance-time graphs (6.5.4)</p> <p>P2.5b.02 Velocity and acceleration (6.5.4)</p> <p>P2.5b.03 More about velocity-time graphs (6.5.4)</p> <p>P2.5b.04 Analysing motion graphs (6.5.4)</p> <p>P2.5b.05 Forces and acceleration (6.5.4)</p> <p>P2.5b.06 RP: Acceleration DEMO (6.5.4)</p> <p>P2.5b.07 RP: Acceleration (6.5.4)</p> <p>P2.5b.08 RP: Analysis and Eqs (6.5.4)</p> <p>P2.5b.09 Weight and terminal velocity (6.5.1)</p> <p>P2.5b.10 Forces and braking (6.5.4)</p> <p>P2.5b.11 Momentum HT (6.5.5)</p>
<p>TEACHER B</p> <p>Units Started in these terms may continue into next (Exam Spec Ref)</p>	<p>B1.5 – Medical</p> <p>B1.5.01 Discovering drugs (4.3.1)</p> <p>B1.5.02 Developing drugs (4.3.1)</p> <p>B1.5.03 Health (4.2.2)</p> <p>B1.5.04 CHD (4.2.2)</p> <p>B1.5.05 Smoking (4.2.2)</p> <p>B1.5.06 Diet and Exercise (4.2.2)</p> <p>B1.5.07 Alcohol (4.2.2)</p> <p>B1.5.08 Mitosis and the cell cycle (4.1.2)</p> <p>B1.5.09 Cancer (4.2.2)</p> <p>B1.5.10 Stem cells & therapeutic cloning (4.1.2)</p> <p>B1.5.11 Ethics of Stem cells (4.1.2)</p> <p>B1.6 – Exchange</p> <p>B1.6.01 Diffusion (4.1.3)</p> <p>B1.6.02 Osmosis (4.1.3)</p> <p>B1.6.03 RP3 Osmosis in plants (4.1.3)</p> <p>B1.6.04 Active transport (4.1.3)</p> <p>B1.6.05 Exchanging materials (4.1.3)</p> <p>B1.6.06 Breathing and gas exchange (4.1.3)</p> <p>B1.6.07 Plants systems (4.2.3)</p> <p>B1.6.08 Transport systems in plants (4.2.3)</p> <p>B1.6.09 Evaporation and Stomata (4.2.3)</p> <p>B1.6.10 Factors affecting transpiration (4.2.3)</p>	<p>B2.9 - Inheritance</p> <p>B2.9.01 Variation (4.6.2)</p> <p>B2.9.02 Inheritance in action HT (4.6.1)</p> <p>B2.9.03 Pedigrees and sex determination (4.6.1)</p> <p>B2.9.04 Inherited disorders (4.6.1)</p> <p>B2.9.05 Genetic screening (4.6.1)</p> <p>B2.9.06 Human Genome Project (4.6.1)</p> <p>B2.9.07 Mutation (4.6.1)</p> <p>B2.9.08 Types of reproduction (4.6.1)</p> <p>B2.9.09 Meiosis (4.6.1)</p> <p>B2.10 Evolution</p> <p>B2.10.01 Evolution by natural selection (4.6.2)</p> <p>B2.10.02 Evidence for evolution (4.6.3)</p> <p>B2.10.03 Antibiotic resistant bacteria (4.6.3)</p> <p>B2.10.04 Extinction (4.6.3)</p> <p>B2.10.05 Selective breeding (4.6.2)</p> <p>B2.10.06 Genetic engineering (4.6.2)</p> <p>B2.10.07 Classification (4.6.4)</p> <p>B2.10.08 New systems of classification (4.6.4)</p>	<p>B2.7 – Ecosystems</p> <p>B2.7.01 Communities (4.7.1)</p> <p>B2.7.02 Organisms in their environment (4.7.1)</p> <p>B2.7.03 Interdependence (4.7.1)</p> <p>B2.7.04 Distribution and abundance (4.7.2)</p> <p>B2.7.05 Systematic sampling (4.7.2)</p> <p>B2.7.06 RP9 Sampling (4.7.2)</p> <p>B2.7.07 Competition (4.7.1)</p> <p>B2.7.08 Types of adaptation (4.7.1)</p> <p>B2.7.09 Animal adaptations (4.7.1)</p> <p>B2.7.10 Plant adaptations (4.7.1)</p> <p>B2.7.11 Feeding relationships (4.7.2)</p> <p>B2.7.12 Predator prey relationships (4.7.2)</p> <p>B2.7.13 Decomposition (4.7.2)</p> <p>B2.7.12 Carbon and Water Cycles (4.7.2)</p>
Assessments	<p>There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 10 students can achieve grades ranging from WT (Working towards) to 77+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor.</p> <p>The assessments will also be used to provide your son with individualised “DIRT” tasks to support or extend.</p> <p>Mock Exams will take place as per the school’s assessment calendar.</p>		
E/L	<p>Educake online short answer questions set to review understanding each week.</p> <p>Additional Educake online short answer questions available for independent learning.</p> <p>Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources</p> <p>Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.</p>		


 Combined Science Specification: <https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF>

Term	Autumn	Spring	Summer
TEACHER A Units Started in these terms may continue into next (Exam Spec Ref)	C2.10 Using resources C2.10.01 Recap C1.2 C2.10.02 Using Earths resources (5.10.1) C2.10.03 Potable water (5.10.1) C2.10.04 RP8: Water purification (5.10.1) C2.10.05 Wastewater treatment (5.10.1) C2.10.06 Alt ^{ive} ways to extract metals HT (5.10.1) C2.10.07 Lifecycle assessments (5.10.2) C2.10.08 Reducing the use of resources (5.10.2) C2.9 - Chemistry of atmosphere C2.9.01 Recap C1.1 (5.1) C2.9.02 Gases in the atmosphere (5.9.1) C2.9.03 Earths early atmosphere (5.9.1) C2.9.04 Greenhouse gases (5.9.2) C2.9.05 Human activities & the GHE (5.9.2) C2.9.06 Global climate change (5.9.2) C2.9.07 Carbon footprint (5.9.2) C2.9.08 Atmospheric pollutants (5.9.3) C2.9.09 Properties and effects of atmospheric pollutants (5.9.3)	C2.7 Organic chemistry C2.7.01 C1.2 Covalent bonding recap C2.7.02 Crude oil and alkanes (5.7.1) C2.7.03 Simple distillation (5.7.1) C2.7.04 Fractional distillation (5.7.1) C2.7.05 Properties of hydrocarbons (5.7.1) C2.7.06 Combustion (5.7.1) C2.7.07 Alkenes and cracking (5.7.1) C2.7.08 Alkenes (5.7.1) C1.3 Quantitative Chemistry 2 C1.3r.01 C1.1 atomic and mass number recap C1.3r.02 Balancing equations (5.3.1) C1.3r.03 Conservation of mass and balancing equations (5.3.1) C1.3r.04 Relative Formula Mass (5.3.1) C1.3r.05 Mass changes (5.3.1) C1.3r.06 Chemical measurements (5.3.1) C1.3r.07 Moles HT (5.3.2) C1.3r.08 Amounts of substances in equations HT (5.3.2) C1.3r.09 Using moles to balance equations HT (5.3.2) C1.3r.10 Limiting reactions HT (5.3.2) C1.3r.11 Concentrations of Solutions (5.3.2) C1.3r.12 Le Chatelier's Principal HT (5.6.2)	Exam Preparation
TEACHER B Units Started in these terms may continue into next (Exam Spec Ref)	P2.6 Waves P2.6.01 The nature of waves (6.6.1) P2.6.02 The properties of waves (6.6.1) P2.6.03 Reflection and refraction HT (6.6.1) P2.6.04 RP: Waves DEMO and EQs (6.6.1) P2.6.05 The electromagnetic spectrum (6.6.2) P2.6.06 Light, infrared, microwaves and radio waves (6.6.2) P2.6.07 RP: Leslie Cube DEMO and EQs (6.6.2) P2.6.08 Communications (6.6.2) P2.6.09 Ultraviolet waves, X-rays, and gamma rays (6.6.2) P2.6.10 X-rays in medicine (6.6.2) B2.11 Co-ordination B2.c11.01 Principles of homeostasis (4.5.1) B2.c11.02 The nervous system (4.5.2) B2.c11.03 Reflexes (4.5.2) B2.c11.04 Synapses HT (4.5.2) B2.c11.05 RP7 Reaction time (4.5.2) B2.c11.06 Principles of hormone control (4.5.3) B2.c11.07 Control of blood glucose (4.5.3) B2.c11.08 Diabetes (4.5.3) B2.c11.09 Adrenaline and Thyroxine - negative feedback HT (4.5.3) B2.c11.10 Sex hormones (4.5.3) B2.c11.11 The menstrual cycle (4.5.3) B2.c11.12 Control of fertility HT (4.5.3) B2.c11.13 Infertility treatment (4.5.3)	C2.8 Chemical analysis C2.8.01 C1.2 Ions recap C2.8.02 Pure substances (5.8.1) C2.8.03 Formulations (5.8.1) C2.8.04 Chromatography and Rf values (5.8.1) C2.8.05 RP6: Chromatography (5.8.1) C2.8.06 Gas tests (5.8.2) P2.7 Electromagnetism P2.7.01 Magnetic fields (6.7.1) P2.7.02 Magnetic fields of electric currents (6.7.1) P2.7.03 The motor effect (1) HT (6.7.2) P2.7.04 Practical: Making a motor (6.7.2) P2.7.05 The motor effect (2) HT (6.7.2)	Exam Preparation
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 11 students can achieve grades ranging from WT (Working towards) to 99. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF			
Term	Autumn	Spring	Summer
Biology Units Started in these terms may continue into next (Exam Spec Ref)	B1.1 - Cell Biology B1.1.1 Microscopy (4.1.1) B1.1.2 Magnification and resolution (4.1.1) B1.1.3 Types of microscopes (4.1.1) B1.1.4 RP1 Microscopy (4.1.1) B1.1.5 Animal and plant Cells (4.1.1) B1.1.6 Eukaryotic & prokaryotic cells (4.1.1) B1.1.7 Orders of magnitude (4.1.1) B1.1.8 Cell specialisation (4.1.1) B1.4 – Systems B1.4.01 Levels of organisation (4.2.1) B1.4.02 Digestive system (4.2.2) B1.4.03 Food groups (4.2.2) B1.4.04 RP4 Qualitative food tests (4.2.2) B1.4.05 Proteins, catalysts & enzymes (4.2.2) B1.4.06 Factors on enzyme action (4.2.2) B1.4.07 Digestive enzymes (4.2.2) B1.4.08 Making digestion efficient (4.2.2) B1.4.09 RP5 Enzymes (4.2.2) B1.4.10 Metabolism and the Liver (4.2.2) B1.4.11 Blood (4.2.2) B1.4.12 Blood vessels (4.2.2) B1.4.13 The heart (4.2.2) B1.4.14 Circulation (4.2.2) B1.4.15 Helping the heart (4.2.2)	B1.3 – Disease B1.3.01 Pathogens and disease (4.3.1) B1.3.02 RP2 Bacterial growth (4.1.1) B1.3.03 Bacterial growth (4.1.1) B1.3.04 Preventing bacterial growth B1.3.05 The spread of disease (4.3.1) B1.3.06 Viral Diseases (4.3.1) B1.3.07 Bacterial diseases (4.3.1) B1.3.08 Fungal and protist diseases (4.3.1) B1.3.09 Human defence response (4.3.1) B1.3.10 Vaccination (4.3.1) B1.3.11 Antibiotics and painkillers (4.3.1) B1.3.12 Plant disease (4.3.3) B1.3.13 Plant defence (4.3.3) B1.2 - Bioenergetics B1.2.01 Photosynthesis (4.4.1) B1.2.02 The rate of photosynthesis (4.4.1) B1.2.03 How plants use glucose (4.4.1) B1.2.04 Making the most of photosynthesis (HIGHER) (4.4.1) B1.2.05 RP6 Photosynthesis (4.4.1) B1.2.06 Aerobic respiration (4.4.2) B1.2.07 Anaerobic respiration (4.4.2) B1.2.08 The response to exercise (4.4.2) B1.2.09 Fermentation (4.4.2)	B1.5 – Medical B1.5.01 Discovering drugs (4.3.1) B1.5.02 Developing drugs (4.3.1) B1.5.03 Developing monoclonal antibodies HT (4.3.2) B1.5.04 Using monoclonal antibodies HT (4.3.2) B1.5.05 Health (4.2.2) B1.5.06 CHD (4.2.2) B1.5.07 Smoking (4.2.2) B1.5.08 Diet and Exercise (4.2.2) B1.5.09 Alcohol (4.2.2) B1.5.10 Mitosis and the cell cycle (4.1.2) B1.5.11 Cancer (4.1.2) B1.5.12 Stem cells and therapeutic cloning (4.1.2) B1.5.13 Ethics of Stem cells (4.1.2)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 9 students can achieve grades ranging from WT (Working towards) to 6+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
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Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF			
Term	Autumn	Spring	Summer
BIOLOGY Units Started in these terms may continue into next (Exam Spec Ref)	B1.6 – Exchange B1.6.01 Diffusion (4.1.3) B1.6.02 Osmosis (4.1.3) B1.6.03 RP3 Osmosis in plants (4.1.3) B1.6.04 Active transport (4.1.3) B1.6.05 Exchanging materials (4.1.3) B1.6.06 Breathing and gas exchange (4.1.3) B1.6.07 Plants systems (4.2.3) B1.6.08 Transport systems in plants (4.2.3) B1.6.09 Evaporation and Stomata (4.2.3) B1.6.10 Factors affecting transpiration (4.2.3) B2.9 - Inheritance B2.9.01 Variation (4.6.2) B2.9.02 Inheritance in action HT (4.6.1) B2.9.03 History of inheritance (4.6.3) B2.9.04 Pedigrees and sex determination (4.6.1) B2.9.05 Inherited disorders (4.6.1) B2.9.06 Genetic screening (4.6.1) B2.9.07 DNA Structure (4.6.1) B2.9.08 Human Genome Project (4.6.1) B2.9.09 Protein synthesis HT (4.6.1) B2.9.10 Mutation (4.6.1) B2.9.11 Types of reproduction (4.6.1) B2.9.12 Meiosis (4.6.1) B2.9.13 Sexual vs Asexual reproduction (4.6.1)	B2.10 - Evolution B2.10.01 Evolution by natural selection (4.6.2) B2.10.02 Theories of evolution (4.6.3) B2.10.03 Evolution and speciation (4.6.2) B2.10.04 Evidence for evolution (4.6.3) B2.10.05 Antibiotic resistant bacteria (4.6.3) B2.10.06 Extinction (4.6.3) B2.10.07 Selective breeding (4.6.2) B2.10.08 Genetic engineering (4.6.2) B2.10.09 Cloning (4.6.2) B2.10.10 Adult Cell Cloning (4.6.2) B2.10.11 Classification (4.6.4) B2.10.12 New systems of classification (4.6.4) B2.7 – Ecosystems B2.7.01 Communities (4.7.1) B2.7.02 Organisms in their environment (4.7.1) B2.7.03 Interdependence (4.7.1) B2.7.04 Distribution and abundance (4.7.2) B2.7.05 Systematic sampling (4.7.2) B2.7.06 RP9 Sampling (4.7.2) B2.7.07 Competition (4.7.1) B2.7.08 Types of adaptation (4.7.1) B2.7.09 Animal adaptations (4.7.1) B2.7.10 Plant adaptations (4.7.1) B2.7.11 Feeding relationships (4.7.2) B2.7.12 Predator prey relationships (4.7.2) B2.7.13 Decomposition (4.7.2) B2.7.14 Carbon & Water Cycles (4.7.2)	B2.8 - Ecology B2.8.01 Human population explosion (4.7.3) B2.8.02 Land and water pollution (4.7.3) B2.8.03 Air pollution (4.7.3) B2.8.04 Indicator species HT (4.7.3) B2.8.05 Global warming (4.7.3) B2.8.06 Land Use (Deforestation and Peat) (4.7.3) B2.8.07 Biogas (4.7.3) B2.8.08 Biodiversity (4.7.3) B2.8.09 Pyramid of Biomass (4.7.4) B2.8.10 Biomass transfer (4.7.4) B2.8.11 Food security (4.7.5) B2.8.12 Farming techniques (4.7.5) B2.8.13 Sustainability (4.7.5)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 10 students can achieve grades ranging from WT (Working towards) to 7+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
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Term	Autumn	Spring	Summer
BIOLOGY Units Started in these terms may continue into next (Exam Spec Ref)	B2.8 - Ecology B2.8.01 Human population explosion (4.7.3) B2.8.02 Land and water pollution (4.7.3) B2.8.03 Air pollution (4.7.3) B2.8.04 Indicator species HT (4.7.3) B2.8.05 Global warming (4.7.3) B2.8.06 Land Use (Deforestation and Peat) (4.7.3) B2.8.07 Biogas (4.7.3) B2.8.08 Biodiversity (4.7.3) B2.8.09 Pyramid of Biomass (4.7.4) B2.8.10 Biomass transfer (4.7.4) B2.8.11 Food security (4.7.5) B2.8.12 Farming techniques (4.7.5) B2.8.13 Sustainability (4.7.5) B2.11 - Control B2.11.01 Principles of homeostasis (4.5.1) B2.11.02 The nervous system (4.5.2) B2.11.03 Reflexes (4.5.2) B2.11.04 Synapses HT (4.5.2) B2.11.05 RP7 Reaction time (4.5.2) B2.11.06 The brain (4.5.2) B2.11.07 The eye (4.5.2) B2.11.08 Eye problems (4.5.2) B2.11.09 Controlling body temperature (4.5.2) B2.11.10 Removing waste products (4.5.3) B2.11.11 The kidney (4.5.3) B2.11.12 ADH (4.5.3) B2.11.13 Renal Failure (4.5.3)	B2.12 - Hormones B2.12.01 Principles of hormone control (4.5.3) B2.12.02 Control of blood glucose (4.5.3) B2.12.03 Diabetes (4.5.3) B2.12.04 Adrenaline and Thyroxine - negative feedback HT (4.5.3) B2.12.05 Sex hormones (4.5.3) B2.12.06 The menstrual cycle (4.5.3) B2.12.07 Control of fertility HT (4.5.3) B2.12.08 Infertility treatment (4.5.3) B2.12.09 Plant hormones (4.5.4) B2.12.10 RP8 Germination (4.5.4) B2.12.11 Using plant hormones HT (4.5.4)	Exam Preparation
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 11 students can achieve grades ranging from WT (Working towards) to 9. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
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Chemistry Specification: https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF			
Term	Autumn	Spring	Summer
Chemistry Units Started in these terms may continue into next (Exam Spec Ref)	C1.1 - Atoms and periodic table C1.1.01 Atoms, elements, and compounds (4.1.1) C1.1.02 Making compounds (4.1.1) C1.1.03 Mixtures (4.1.1) C1.1.04 Balancing equations (4.1.1) C1.1.05 Development of the model of the atom (4.1.1) C1.1.06 Atomic structure (4.1.1) C1.1.07 Atomic and mass number (4.1.1) C1.1.08 Electronic structure (4.1.1) C1.1.09 The periodic table (4.1.2) C1.1.10 Metals and non- metals (4.1.2) C1.1.11 Group 0 (4.1.2) C1.1.12 Group 1 (4.1.2) C1.1.13 Group 7 (4.1.2) C1.1.14 Transition metals (4.1.3) C1.1.15 Relative Formula mass (4.1.1) C1.1.16 Chromatography (4.1.1) C1.1.17 Distillation (4.1.1)	C1.2 - Bonding and structure C1.2.01 Chemical bonds (4.2.1) C1.2.02 Ionic bonding (4.2.1) C1.2.03 Ionic compounds (4.2.2) C1.2.04 Covalent bonds (4.2.1) C1.2.05 Giant covalent compounds (4.2.3) C1.2.06 Allotropes of carbon (4.2.3) C1.2.07 Metallic bonding (4.2.1) C1.2.08 Metals and alloys (4.2.2) C1.2.09 Changes of state (4.2.2) C1.2.10 Polymers (4.2.2) C1.2.11 Nanoparticles and their uses (4.2.4) C2.9 - Chemistry of atmosphere C2.9.01 Recap C1.1 (4.1) C2.9.2 Levels of O ₂ and CO ₂ in the atmosphere (4.9.1) C2.9.03 Earths early atmosphere (4.9.1) C2.9.04 Greenhouse gases (4.9.2) C2.9.05 Human activities and the GHE (4.9.2) C2.9.06 Global climate change (4.9.2) C2.9.07 Carbon footprint (4.9.2) C2.9.08 Atmospheric pollutants (4.9.3) C2.9.09 Properties and effects of atmospheric pollutants (4.9.3)	C1.5 - Energy Changes C1.5.01 Recap C1.2 (4.2) C1.5.02 Recap Balancing equations (4.1.1) C1.5.03 Exothermic and endothermic reactions (4.5.1) C1.5.04 RP4: Temperature changes (4.5.1) C1.5.05 Reaction profiles (4.5.1) C1.5.06 The energy change of reactions HT (4.5.1) C1.5.07 Chemical cells and batteries (4.5.2) C1.5.08 Fuel cells (4.5.2)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 9 students can achieve grades ranging from WT (Working towards) to 6+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
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Term	Autumn	Spring	Summer
CHEMISTRY Units Started in these terms may continue into next (Exam Spec Ref)	C1.4 Chemical changes C1.4.01 Recap C1.2 Atoms and ions C1.4.02 Metal Oxides (4.4.1) C1.4.03 The reactivity series (4.4.1) C1.4.04 Extraction and reduction of metals (4.4.1) C1.4.05 Oxidation and reduction in terms of electrons HT (4.4.1) C1.4.06 Acids and metals (4.4.2) C1.4.07 Metal carbonates (4.4.2) C1.4.08 Neutralisation and salt production (4.4.2) C1.4.09 Soluble salts (4.4.2) C1.4.10 RP1: Making salts from an insoluble oxide or carbonate (4.4.2) C1.4.11 pH scale and neutralisation (4.4.2) C1.4.12 Titrations RP2: Neutralisation using titration (4.4.2) C1.4.13 Titration calculations (4.4.2) C1.4.14 Strong and weak acids HT (4.4.2) C1.4.15 Electrolysis (4.4.3) C1.4.16 Metal extraction using electrolysis (4.4.3) C1.4.17 Electrolysis of aqueous solutions inc. representation of reactions at electrodes as half equations HT (4.4.3) C1.4.18 RP3: Electrolysis (4.4.3)	C2.9 - Chemistry of atmosphere C2.9.01 Recap C1.1 (4.1) C2.9.2 Levels of O ₂ and CO ₂ in the atmosphere (4.9.1) C2.9.03 Earths early atmosphere (4.9.1) C2.9.04 Greenhouse gases (4.9.2) C2.9.05 Human activities and the GHE (4.9.2) C2.9.06 Global climate change (4.9.2) C2.9.07 Carbon footprint (4.9.2) C2.9.08 Atmospheric pollutants (4.9.3) C2.9.09 Properties and effects of atmospheric pollutants (4.9.3) C2.6 The rate and extent of chemical change C2.6.01 Recap C1.1 C2.6.02 Calculating rates of reactions (4.6.1) C2.6.03 Interpreting ROR graphs (4.6.1) C2.6.04 Effect of temperature on RoR (4.6.1) C2.6.05 Effect of concentration on RoR (4.6.1) C2.6.06 Effect of surface area on RoR (4.6.1) C2.6.07 Catalysts (4.6.1) C2.6.08 RP5: Rates of reaction (4.6.1) C2.6.09 Collision theory and activation energy (4.6.1) C2.6.10 Reversible reactions (4.6.2) C2.6.11 Equilibrium (4.6.2) C2.6.12 Le Chatelier's principle HT (4.6.2)	C2.10 Using resources C2.10.01 Recap C1.2 C2.10.02 Using Earths resources (4.10.1) C2.10.03 Potable water (4.10.1) C2.10.04 RP8: Water purification (4.10.1) C2.10.05 Wastewater treatment (4.10.1) C2.10.06 Alternative ways of extracting metals HT (4.10.1) C2.10.07 Lifecycle assessments (4.10.2) C2.10.08 Reducing the use of resources (5.10.2) C2.10.09 Corrosion and its prevention (4.10.3) C2.10.10 Alloys as useful materials (4.10.3) C2.10.11 Ceramics, polymers, and composites (4.10.3) C2.10.12 Haber process and use of NPK fertilisers (4.10.4) C2.10.13 Production and uses of NPK fertilisers (4.10.4)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 10 students can achieve grades ranging from WT (Working towards) to 7+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
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Chemistry Specification: https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF			
Term	Autumn	Spring	Summer
CHEMISTRY Units Started in these terms may continue into next (Exam Spec Ref)	C2.10 Using resources C2.10.01 Recap C1.2 C2.10.02 Using Earths resources (4.10.1) C2.10.03 Potable water (4.10.1) C2.10.04 RP8: Water purification (4.10.1) C2.10.05 Wastewater treatment (4.10.1) C2.10.06 Alternative ways of extracting metals HT (4.10.1) C2.10.07 Lifecycle assessments (4.10.2) C2.10.08 Reducing the use of resources (5.10.2) C2.10.09 Corrosion and its prevention (4.10.3) C2.10.10 Alloys as useful materials (4.10.3) C2.10.11 Ceramics, polymers, and composites (4.10.3) C2.10.12 Haber process and use of NPK fertilisers (4.10.4) C2.10.13 Production and uses of NPK fertilisers (4.10.4) C1.3r Quantitative Chemistry Review C1.3r.01 Chemical measurements (4.3.1) C1.3r.02 Moles HT (4.3.2) C1.3r.03 Amounts of substances in equations HT (4.3.2) C1.3r.04 Using moles to balance equations HT (4.3.2) C1.3r.05 Limiting reactions HT (4.3.2) C1.3r.06 Concentrations of Solutions (4.3.2) C1.3r.07 Percentage yield (4.3.3) C1.3r.08 Atom economy (4.3.3) C1.3r.09 Using concentrations of solutions in mol/dm ³ HT (4.3.4) C1.3r.10 Use of amount of substance in relation to volumes of gases HT (4.3.5) C1.3r.11 Le Chatelier's Principle HT (4.6.2)	C2.7 Organic chemistry Review C2.7r.01 Crude oil and alkanes (4.7.1) C2.7r.02 Fractional distillation (4.7.1) C2.7r.03 Properties of hydrocarbons (4.7.1) C2.7r.04 Alkenes and cracking (4.7.1) C2.7r.05 Alkenes (4.7.2) C2.7r.06 Reactions of alkenes (4.7.2) C2.7r.07 Alcohols (4.7.2) C2.7r.08 Reactions of alcohols (4.7.2) C2.7r.09 Reactions of Carboxylic acids (4.7.2) C2.7r.10 Esters (4.7.2) C2.7r.11 Addition polymerisation (4.7.3) C2.7r.12 Condensation polymerisation HT (4.7.3) C2.7r.13 DNA and other naturally occurring polymers (4.7.3) C1.4r Chemical changes Review C1.4r.01 Extraction and reduction of metals (4.4.1) C1.4r.02 Oxidation and reduction in terms of electrons HT (4.4.1) C1.4r.03 Neutralisation and salt production (4.4.2) C1.4r.04 Soluble salts (4.4.2) C1.4r.05 Titrations RP2: Neutralisation using titration (4.4.2) C1.4r.06 Titration calculations (4.4.2) C1.4r.07 Strong and weak acids HT (4.4.2) C1.4r.08 Electrolysis (4.4.3) C1.4r.09 Metal extraction using electrolysis C1.4r.10 Electrolysis of aqueous solutions inc. representation of reactions at electrodes as half equations HT (4.4.3)	Exam Preparation
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 11 students can achieve grades ranging from WT (Working towards) to 9. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



GCSE Physics – Y9			
Physics Specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF			
Term	Autumn	Spring	Summer
Physics Units Started in these terms may continue into next (Exam Spec Ref)	P1.1 - Energy Transfer P1.1.01 Introduction to Physics GCSE (4.1.1) P1.1.02 Changes in energy stores (4.1.1) P1.1.03 Conservation of energy (4.1.2) P1.1.04 Energy and work (4.5.2) P1.1.05 Gravitational potential energy stores (4.1.1) P1.1.06 Kinetic and elastic stores (4.1.1) P1.1.07 Energy dissipation (4.1.2) P1.1.08 Energy and efficiency (4.1.2) P1.1.09 Electrical appliances (4.2.4) P1.1.10 Energy and power (4.1.1) P1.1.11 Energy transfer by conduction and convection (4.1.2) P1.1.12 Infrared radiation P1.1.13 More about infrared radiation P1.1.14 Heating and insulating buildings (4.1.2) P1.1.15 RP: Insulation Planning (4.1.2) P1.1.16 RP: Insulation Practical (4.1.2) P1.1.17 RP: Analysis and Exam Questions (4.1.2)	P1.2 – Electricity P1.2.01 Energy Demands (4.1.3) P1.2.02 Energy from wind and water (4.1.3) P1.2.03 Energy from Sun & Earth (4.1.3) P1.2.04 Energy and the environment (4.1.3) P1.2.05 Current and Charge (4.2.1) P1.2.06 Potential difference and resistance (4.2.1) P1.2.07 RP: Resistance Planning/Demo (4.2.1) P1.2.08 RP: Resistance Practical (4.2.1) P1.2.09 RP: Resistance Analysis and EQs (4.2.1) P1.2.10 Component Characteristics (4.2.1) P1.2.11 RP: Component Characteristics DEMO (4.2.1) P1.2.12 RP: Component Characteristics (4.2.1) P1.2.13 Series circuits (4.2.2) P1.2.14 Parallel circuits (4.2.2) P1.2.15 Alternating Current (4.2.3) P1.2.16 Cables and plugs (4.2.3) P1.2.17 Practical: Wiring a plug (4.2.3) P1.2.18 Electrical power and pd (4.2.4) P1.2.19 Electrical currents and energy transfer (4.2.4) P1.2.20 Appliances and Efficiency (4.2.4) P1.2.21 Static 1 (4.2.5) P1.2.22 Static 2 (4.2.5)	P1.3 - Particle model P1.3.01 Density (4.3.1) P1.3.02 RP: Density Demo & Practical (4.3.1) P1.3.03 RP: Density Analysis and Eqs (4.3.1) P1.3.04 States of matter (4.3.1) P1.3.05 Changes of state (4.3.1) P1.3.06 Internal energy (4.3.2) P1.3.07 Specific heat capacity (4.3.2) P1.3.08 RP: SHC Demo & Practical (4.3.2) P1.3.09 RP: SHC Analysis and EQs (4.3.2) P1.3.10 Specific latent heat (4.3.2) P1.3.11 Multistep eqs practice (4.3) P1.3.12 Gas pressure and temperature (4.3.3) P1.3.13 Gas pressure and volume (4.3.3) P1.3.14 Inverse proportion (4.3.3)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 9 students can achieve grades ranging from WT (Working towards) to 6+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised “DIRT” tasks to support or extend. Mock Exams will take place as per the school’s assessment calendar.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



GCSE Physics – Y10			
Physics Specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF			
Term	Autumn	Spring	Summer
PHYSICS Units Started in these terms may continue into next (Exam Spec Ref)	P1-4 The Atom P1.4.01 Atoms and radiation (4.4.1) P1.4.02 The discovery of the nucleus (4.4.1) P1.4.03 Changes in the nucleus (4.4.2) P1.4.04 More about alpha, beta and gamma radiation (4.4.2) P1.4.05 Activity and half-life (4.4.3) P1.4.06 Nuclear radiation in medicine (4.4.3) P1.4.07 Nuclear fission (4.4.4) P1.4.08 Nuclear fusion (4.4.4) P1.4.09 Nuclear issues (4.4.4) P2-5a Forces P2.5a.01 Vectors and scalars (4.5.1) P2.5a.02 Forces between objects (4.5.1) P2.5a.03 Resultant forces (4.5.1) P2.5a.04 Moments at work (4.5.4) P2.5a.05 More about levers and gears (4.5.4) P2.5a.06 Centre of mass (4.5.1) P2.5a.07 Moments and equilibrium (4.5.4) P2.5a.08 The parallelogram of forces (4.5.1) P2.5a.09 Resolution of forces (4.5.1) P2.5a.10 Forces and elasticity (4.5.3) P2.5a.11 RP: Hooke's law Demo and Practical (4.5.3) P2.5a.12 RP: Analysis and EQs (4.5.3) P2.5a.13 Pressure and surfaces (4.5.5) P2.5a.14 Pressure in a liquid at rest (4.5.5) P2.5a.15 Atmospheric pressure (4.5.5) P2.5a.16 Upthrust and floatation (4.5.5) P2.5a.17 Revisit: Vector diagrams (4.5.1)	P2-5b Motion P2.5b.01 Speed and distance-time graphs (4.5.6) P2.5b.02 Velocity and acceleration (4.5.6) P2.5b.03 More about velocity-time graphs (4.5.6) P2.5b.04 Analysing motion graphs (4.5.6) P2.5b.05 Forces and acceleration (4.5.6) P2.5b.06 RP: Acceleration DEMO (4.5.6) P2.5b.07 RP: Acceleration (4.5.6) P2.5b.08 RP: Analysis and Eqs (4.5.6) P2.5b.09 Weight and terminal velocity (4.5.6) P2.5b.10 Forces and braking (4.5.6) P2.5b.11 Momentum (4.5.7) P2.5b.12 Using conservation of momentum (4.5.7) P2.5b.13 Impact forces (4.5.7) P2.5b.14 Safety first (4.5.6)	Review module P.R.01 Insulation RP (4.1.2) P.R.02 SHC RP (4.3.2) P.R.03 Resistance RP (4.2.1) P.R.04 Component Characteristics RP (4.2.1) P.R.05 Fission & Fusion (4.4.4) P.R.06 Half-life and decay equations (4.4.3) P.R.07 Boyle's law (4.3.3) P.R.08 Static (4.2.5) P.R.09 Multistep equation calculations (4.3) P.R.10 Inverse proportion (4.3.3)
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 10 students can achieve grades ranging from WT (Working towards) to 7+. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised “DIRT” tasks to support or extend. Mock Exams will take place as per the school’s assessment calendar.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



GCSE Physics – Y11			
Physics Specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF			
Term	Autumn	Spring	Summer
PHYSICS Units Started in these terms may continue into next (Exam Spec Ref)	P2-6 Waves P2.6.01 The nature of waves (4.6.1) P2.6.02 The properties of waves (4.6.1) P2.6.03 Reflection and refraction (4.6.1) P2.6.04 More about waves (4.6.1) P2.6.05 Sound waves (4.6.1) P2.6.06 RP: Waves DEMO and EQs (4.6.1) P2.6.07 The uses of ultrasound (4.6.1) P2.6.08 Seismic waves (4.6.1) P2.6.09 The electromagnetic spectrum (4.6.2) P2.6.10 Light, infrared, microwaves and radio waves (4.6.2) P2.6.11 RP: Leslie Cube DEMO and EQs (4.6.2) P2.6.12 Communications (4.6.2) P2.6.13 Ultraviolet waves, X-rays, and gamma rays (4.6.2) P2.6.14 X-rays in medicine (4.6.2) P2.6.15 Reflection of light (4.6.2) P2.6.16 Refraction of light (4.6.2) P2.6.17 RP: Reflection and Refraction DEMO & Practical (4.6.2) P2.6.18 RP: Analysis and EQs (4.6.2) P2.6.19 Light and colour (4.6.2) P2.6.20 Lenses (4.6.2) P2.6.21 Using lenses (4.6.2)	P2-7 Electromagnetism P2.7.01 Magnetic fields (4.7.1) P2.7.02 Magnetic fields of electric currents (4.7.1) P2.7.03 Electromagnets in devices (4.7.2) P2.7.04 The motor effect (4.7.2) P2.7.05 Practical: Making a motor (4.7.2) P2.7.06 The generator effect (4.7.3) P2.7.07 The alternating-current generator (4.7.3) P2.7.08 Transformers (4.7.3) P2.7.09 Transformers in action (4.7.3) P2-8 Space P2.8.01 Formation of the solar system (4.8.1) P2.8.02 The life history of a star (4.8.1) P2.8.03 Planets, satellites, and orbits (4.8.1) P2.8.04 The expanding universe (4.8.2) P2.8.05 The beginning and future of the Universe (4.8.2)	Exam Preparation
Assessments	There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 11 students can achieve grades ranging from WT (Working towards) to 9. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Children progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your son with individualised “DIRT” tasks to support or extend. Mock Exams will take place as per the school’s assessment calendar.		
E/L	Educake online short answer questions set to review understanding each week. Additional Educake online short answer questions available for independent learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources Extended Learning Challenges on Teams resources. Including Foci on Careers, Practical Activities and Research projects. They should be completed and returned to his class teacher. These challenges are designed to engage the boys in activities that will stimulate and extend. He will be recognised for his efforts with an award certificate.		



A-Level Biology – Y12		
Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF		
Units Started in these terms may continue into next (Exam Spec Ref)		
Autumn	Spring	Summer
<p>B1.01) Biological Molecules</p> <ul style="list-style-type: none"> Large and small molecules (3.1.1) Saccharides (3.1.2) RP11: Quantitative test for glucose (3.6.4) Polysaccharides (3.1.2) Lipids (3.1.3) Phospholipids (3.1.3) Polypeptides (3.1.4) Chromatography <p>B1.02) Enzymes</p> <ul style="list-style-type: none"> Enzyme action (3.1.4) Factors affecting enzymes action (3.1.4) Collisions and limiting factors (3.1.4) RP1: Enzyme activity (3.1.4) Inhibitors (3.1.4) <p>B1.03) Cells</p> <ul style="list-style-type: none"> Microscopy (3.2.1) Eukaryotic cells (3.2.1) Cell surface membrane (3.2.3) Movement across membranes (3.2.3) RP4: Cell membrane permeability (3.2.3) Osmosis (3.2.3) RP3: Osmosis (3.2.3) Prokaryotic Cells (3.2.1) <p>B1.04) DNA and Protein Synthesis</p> <ul style="list-style-type: none"> Discovering DNA (3.1.5) DNA structure (3.1.5) Chromosomes and genes (3.4.1) Protein synthesis – Transcription (3.4.1, 3.1.7) Protein synthesis – Translation (3.4.1) <p>B1.05) The Cell Cycle</p> <ul style="list-style-type: none"> DNA replication (3.1.5) Mitosis (3.2.2) RP2: Mitosis (3.2.2) Cell cycle and Cancer Cell cycle and Prokaryotes <p>B1.06) Immune System</p> <ul style="list-style-type: none"> Nonspecific defence (3.2.4) Lymphocytes and humoral defence (3.2.4) Cellular response (3.2.4) Immunity (3.2.4) Vaccination (3.2.4) Viruses (3.2.4) Use of antibodies (3.2.4) 	<p>B1.07) Gaseous Exchange</p> <ul style="list-style-type: none"> Surface area: Volume (3.3.1) Gas exchange in insects (3.3.2) Gas exchange in fish (3.3.2) RP5a: Gill dissection (3.3.2) Human ventilation (3.3.2) Human gas exchange (3.3.2) Analysing health data (3.3.2) Standard deviation (3.4.7) Gas exchange in plants (3.3.2) <p>B1.08) Digestion and Absorption</p> <ul style="list-style-type: none"> Digesting carbohydrates (3.3.3) Digesting proteins (3.3.3) Digesting lipids (3.3.3) <p>B1.09) Mass transport in Animals</p> <ul style="list-style-type: none"> Blood and blood vessels (3.3.4) Tissue fluid (3.3.4) Haemoglobin (3.1.8, 3.3.4) The cardiac cycle (3.3.4) Heart structure (3.3.4) RP5b: Heart dissection (3.3.4) CHD (3.3.4) <p>B1.10) Mass transport in Plants</p> <ul style="list-style-type: none"> Transpiration (3.1.7, 3.3.4) Translocation (3.3.4) <p>B1.11) Genetic Diversity</p> <ul style="list-style-type: none"> Meiosis (3.4.3) Genetic diversity (3.4.3) Natural selection (3.4.4) RP 6: Microbial growth (3.4.4) Investigating variation (3.4.4) <p>B1.12) Species and Taxonomy</p> <ul style="list-style-type: none"> Classification and taxonomy (3.4.5) Methods of classification (3.4.7) 	<p>B1.13) Biodiversity within a community</p> <ul style="list-style-type: none"> Investigating diversity (3.4.6) Measuring diversity (3.4.6) Farming and Biodiversity (3.4.6) <p style="text-align: center;">AS EXAMS</p> <p>B2.09) Populations in Ecosystems</p> <ul style="list-style-type: none"> Ecosystems (3.7.4) Competition (3.7.4) Field studies (3.7.4) RP12: Field Studies (3.7.4)
Assessments	<p>There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 12 students can achieve grades ranging from U to A. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Students’ progress at different rates. A good AtL is the most important factor.</p> <p>The assessments will also be used to provide your child with individualised “DIRT” tasks to support or extend. Mock Exams will take place as per the school’s assessment calendar.</p> <p>AS Exams will take place in the summer term with grade awarded by AQA in August. Attaining a grade D is a prerequisite of moving onto the second year of the course.</p>	
E/L	<p>Students should complete a minimum of 5 Hours per week of independent learning outside the classroom this may include completing set tasks, preparing for lab work, Pre-reading, consolidating learning, deeper reading, extended learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources.</p> <p>The best ways to develop understanding is through the completion of practice questions. Students should spend 2-3 hours per week completing practice questions. Should a student be set specific questions to complete before a class it is essential these are done by the deadline, as they will be reviewed in class and any gaps in understanding will be addressed. Students often find it challenging to decipher what the question is asking, so practice is the best way to understand what is required.</p>	



A-Level Biology – Y13		
Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-7401-7402-SP-2015.PDF		
Units Started in these terms may continue into next (Exam Spec Ref)		
Autumn	Spring	Summer
<p>B2.09) Populations in Ecosystems</p> <ul style="list-style-type: none"> • Predation (3.7.4) • Succession (3.7.4) • Managing succession (3.7.4) <p>B2.01) Energy Transfer</p> <ul style="list-style-type: none"> • Light dependent reactions of photosynthesis (3.5.1) • RP8: Hill reaction (3.5.1) • Light independent reactions of photosynthesis (3.5.1) • Limiting factors on photosynthesis (3.5.1) • Efficiency of photosynthesis (3.5.1) • RP7: Chromatography of photosynthetic pigments. (3.5.1) • Glycolysis (3.5.2) • Anaerobic respiration (3.5.2) • RP9: Respiration (3.5.2) • Aerobic respiration (3.5.2) <p>B2.02) Nutrient Cycles</p> <ul style="list-style-type: none"> • Consumers (3.5.3) • The Nitrogen cycle (3.5.4) • Decomposition (3.5.4) • Fertilisers (3.5.4) • Consequences of fertiliser use (3.5.4) <p>B2.03) Response</p> <ul style="list-style-type: none"> • Kinesis and taxis (3.6.1) • RP10: Choice chambers (3.6.1) • Tropism (3.6.1) • Receptors (3.6.1) • Reflexes (3.6.1) • Response to internal stimuli (3.6.1) <p>B2.04) Nervous Coordination</p> <ul style="list-style-type: none"> • Resting potential (3.6.2) • Action potential (3.6.2) • Myelinated neurones (3.6.2) • Synapses (3.6.2) <p>B2.05) Muscles and movement</p> <ul style="list-style-type: none"> • Muscle contractions (3.6.3) • Limits on activity (3.6.3) • Controlling Muscle contraction (3.6.3) • Different muscle fibres (3.6.3) 	<p>B2.06) Internal Conditions</p> <ul style="list-style-type: none"> • Endocrine system (3.6.4) • Glucose uptake (3.6.4) • Falling glucose levels (3.6.4) • Osmoregulation (3.6.4) • The Kidney (3.6.4) <p>B2.07) Genes, alleles, and inheritance</p> <ul style="list-style-type: none"> • Inheritance (3.7.1) • Monohybrid inheritance (3.7.1) • Sex linkage (3.7.1) • Pedigrees (3.7.1) • Dihybrid inheritance (3.7.1) • Epistasis (3.7.1) • Autosomal linkage (3.7.1) <p>B2.08) Gene pools, selection, and speciation</p> <ul style="list-style-type: none"> • Gene pools (3.7.2) • Selection (3.7.3) • Speciation (3.7.3) • Genetic Drift (3.7.3) <p>B2.10) Control of gene expression</p> <ul style="list-style-type: none"> • Stem Cells (3.8.2) • Mutation (3.8.1) • Control of transcription (3.8.2) • Epigenetics (3.8.2) • Control of translation (3.8.2) • Gene mutation and Cancer (3.8.2) <p>B2.11) Gene cloning and gene transfer</p> <ul style="list-style-type: none"> • Recombinant DNA (3.8.4) • In vitro gene cloning (3.8.4) • In vivo gene cloning (3.8.4) • Genetic modification (3.8.4) • Gene therapy (3.8.4) 	<p>12) Using gene technology</p> <ul style="list-style-type: none"> • Sanger sequencing (3.8.3) • Locating alleles in genes (3.8.4) • Genetic finger printing (3.8.4) • Genetic counselling (3.8.4) <p>Synoptic Essays</p> <p style="text-align: center;">A-LEVEL EXAMS</p>
Assessments	<p>There are graded assessments after each unit covered, you will be informed of specific dates two week prior to the exam date. In Year 13 students can achieve grades ranging from U to A*. They will also achieve an AtL (Attitude to Learning) score ranging from 4 up to 1. Students' progress at different rates. A good AtL is the most important factor. The assessments will also be used to provide your child with individualised "DIRT" tasks to support or extend. Mock Exams will take place as per the school's assessment calendar. A Level Exams will take place in the summer term with grade awarded by AQA in August.</p>	
E/L	<p>Students should complete a minimum of 5 Hours per week of independent learning outside the classroom this may include completing set tasks, preparing for lab work, Pre-reading, consolidating learning, deeper reading, extended learning. Extensive DIRT and revision resources on Teams used for independent learning. Including, textbooks, glossaries, knowledge organisers, practice questions and links to online resources. The best ways to develop understanding is through the completion of practice questions. Students should spend 2-3 hours per week completing practice questions. Should a student be set specific questions to complete before a class it is essential these are done by the deadline, as they will be reviewed in class and any gaps in understanding will be addressed. Students often find it challenging to decipher what the question is asking, so practice is the best way to understand what is required.</p>	



	Autumn Term	Spring Term	Summer Term
Topics	<p>Teacher 1: Mrs Hardiman 3.1 - Physical chemistry <u>3.1.1 - Atomic structure</u></p> <ul style="list-style-type: none"> ★ 3.1.1.1 Fundamental particles ★ 3.1.1.2 Mass number and isotopes ★ 3.1.1.3 Electron configuration <p><u>3.1.2 - Amount of substance</u></p> <ul style="list-style-type: none"> ★ 3.1.2.1 Relative atomic mass and relative molecular mass ★ 3.1.2.2 The mole and the Avogadro constant ★ 3.1.2.3 The ideal gas equation ★ 3.1.2.4 Empirical and molecular formula ★ 3.1.2.5 Balanced equations and associated calculations <p><u>3.1.3 - Bonding</u></p> <ul style="list-style-type: none"> ★ 3.1.3.1 Ionic bonding ★ 3.1.3.2 Nature of covalent and dative covalent bonds ★ 3.1.3.3 Metallic bonding ★ 3.1.3.4 Bonding and physical properties ★ 3.1.3.6 Bond polarity ★ 3.1.3.7 Forces between molecules <p><u>3.1.4 - Energetics</u></p> <ul style="list-style-type: none"> ★ 3.1.4.1 Enthalpy change ★ 3.1.4.2 Calorimetry ★ 3.1.4.3 Applications of Hess's law ★ 3.1.4.4 Bond enthalpies 	<p>Teacher 1: Mrs Hardiman <u>3.1.5 - Kinetics</u></p> <ul style="list-style-type: none"> ★ 3.1.5.1 Collision theory ★ 3.1.5.2 Maxwell-Boltzmann distribution ★ 3.1.5.3 Effect of temperature on reaction rate ★ 3.1.5.4 Effect of concentration and pressure ★ 3.1.5.5 Catalysts <p><u>3.1.6 - Chemical equilibria, Le Chatelier's principle and Kc</u></p> <ul style="list-style-type: none"> ★ 3.1.6.1 Chemical equilibria and Le Chatelier's principle ★ 3.1.6.2 Equilibrium constant Kc for homogeneous systems <p><u>3.1.7 - Oxidation, reduction and redox equations</u> Redox reactions involve a transfer of electrons from the reducing agent to the oxidising agent. The change in the oxidation state of an element in a compound or ion is used to identify the element that has been oxidised or reduced in a given reaction. Separate half-equations are written for the oxidation or reduction processes. These half-equations can then be combined to give an overall equation for any redox reaction.</p> <p>3.2 - Inorganic chemistry <u>3.2.1 - Periodicity</u></p> <ul style="list-style-type: none"> ★ 3.2.1.1 Classification ★ 3.2.1.2 Physical properties of Period 3 elements <p><u>3.2.2 - Group 2, the alkaline earth metals</u> The elements in Group 2 are called the alkaline earth metals. The trends in the solubilities of the hydroxides and the sulphates of these elements are linked to their use. Barium sulphate, magnesium hydroxide and magnesium sulphate have applications in medicines whilst calcium hydroxide is used in agriculture to change soil pH, which is essential for good crop production and maintaining the food supply.</p> <p><u>3.2.3 - Group 7(17), the halogens</u></p> <ul style="list-style-type: none"> ★ 3.2.3.1 Trends in properties ★ 3.2.3.2 Uses of chlorine and chlorate(I) 	<p>Teacher 1: Mrs Hardiman 3.3 – Organic Chemistry (A-Level) <u>3.3.7 - Optical isomerism</u> Compounds that contain an asymmetric carbon atom form stereoisomers that differ in their effect on plane polarised light. This type of isomerism is called optical isomerism.</p> <p><u>3.3.8 - Aldehydes and ketones</u> Aldehydes, ketones, carboxylic acids and their derivatives all contain the carbonyl group which is attacked by nucleophiles. This section includes the addition reactions of aldehydes and ketones.</p> <p><u>3.3.9 - Carboxylic acids and derivatives</u></p> <ul style="list-style-type: none"> ★ 3.3.9.1 Carboxylic acids and esters ★ 3.3.9.2 Acylation ★ Required practical 10 - Preparation of: <ul style="list-style-type: none"> ✓ a pure organic solid and test of its purity ✓ a pure organic liquid. <p><u>3.3.10 - Aromatic chemistry</u></p> <ul style="list-style-type: none"> ★ 3.3.10.1 Bonding ★ 3.3.10.2 Electrophilic substitution
	<p>Teacher 2: Miss Dare 3.3 - Organic chemistry <u>3.3.1 - Introduction to organic chemistry</u></p> <ul style="list-style-type: none"> ★ 3.3.1.1 Nomenclature ★ 3.3.1.2 Reaction mechanisms ★ 3.3.1.3 Isomerism <p><u>3.3.2 - Alkanes</u></p> <ul style="list-style-type: none"> ★ 3.3.2.1 Fractional distillation of crude oil ★ 3.3.2.2 Modification of alkanes by cracking ★ 3.3.2.3 Combustion of alkanes ★ 3.3.2.4 Chlorination of alkanes <p><u>3.3.3 - Halogenoalkanes</u></p> <ul style="list-style-type: none"> ★ 3.3.3.1 Nucleophilic substitution ★ 3.3.3.2 Elimination ★ 3.3.3.3 Ozone depletion <p><u>3.1.2 - Amount of substance</u></p> <ul style="list-style-type: none"> ★ Required practical 1 - Make up a volumetric solution and carry out a simple acid-base titration. <p><u>3.1.4 - Energetics</u></p> <ul style="list-style-type: none"> ★ Required practical 2 - Measurement of an enthalpy change. 	<p>Teacher 2: Miss Dare <u>3.3.4 - Alkenes</u></p> <ul style="list-style-type: none"> ★ 3.3.4.1 Structure, bonding and reactivity ★ 3.3.4.2 Addition reactions of alkenes ★ 3.3.4.3 Addition polymers <p><u>3.3.5 - Alcohols</u></p> <ul style="list-style-type: none"> ★ 3.3.5.1 Alcohol production ★ 3.3.5.2 Oxidation of alcohols ★ 3.3.5.3 Elimination ★ Required practical 5 - Distillation of a product from a reaction. <p><u>3.3.6 - Organic analysis</u></p> <ul style="list-style-type: none"> ★ 3.3.6.1 Identification of functional groups by test-tube reactions ★ Required practical 6 - Tests for alcohol, aldehyde, alkene and carboxylic acid. ★ 3.3.6.2 Mass spectrometry ★ 3.3.6.3 Infrared spectroscopy <p><u>3.1.5 - Kinetics</u></p> <ul style="list-style-type: none"> ★ Required practical 3 - Investigation of how the rate of a reaction changes with temperature. <p><u>3.2.3 - Group 7(17), the halogens</u></p> <ul style="list-style-type: none"> ★ Required practical 4 - Carry out simple test-tube reactions to identify: <ul style="list-style-type: none"> ✓ cations – Group 2, NH₄⁺ ✓ anions – Group 7 (halide ions), OH⁻, CO₃²⁻, SO₄²⁻ 	<p>Teacher 2: Miss Dare Application of chemical concepts – AS Paper 1 3.1.1 - Atomic Structure 3.1.2 - Amounts of Substance 3.1.3 - Bonding 3.1.4 - Energetics 3.1.6 - Chemical Equilibria, Le Chatelier & KC 3.1.7 - Oxidation, Reduction and Redox Equations 3.2.1 - Periodicity 3.2.2 - Group 2 3.2.3 - Group 7 Practical - All skills/methods related to the topics above.</p> <p>AS Paper 2 3.1.2 - Amounts of Substance 3.1.3 - Bonding 3.1.4 - Energetics 3.1.5 - Kinetics 3.1.6 - Chemical Equilibria, Le Chatelier & KC 3.3.1 - Introduction to Organic Chemistry 3.3.2 - Alkanes 3.3.3 - Halogenoalkanes 3.3.4 - Alkenes 3.3.5 - Alcohols 3.3.6 - Organic Analysis Practical - All skills/methods related to the topics above.</p>
Exam Spec reference and	<p>3.1 - Physical chemistry</p> <ul style="list-style-type: none"> ★ 3.1.1 - Atomic structure ★ 3.1.2 - Amount of substance ★ 3.1.3 - Bonding ★ 3.1.4 - Energetics <p>3.3 - Organic Chemistry</p> <ul style="list-style-type: none"> ★ 3.3.1 - Introduction to organic chemistry 	<p>3.1 - Physical chemistry</p> <ul style="list-style-type: none"> ★ 3.1.5 - Kinetics ★ 3.1.6 - Chemical equilibria, Le Chatelier's principle and Kc ★ 3.1.7 - Oxidation, reduction and redox equations <p>3.3 - Organic Chemistry</p> <ul style="list-style-type: none"> ★ 3.3.4 - Alkenes 	<p>Exam Overview - Y12 Chemistry * see link below</p> <p>3.3 - Organic chemistry</p> <ul style="list-style-type: none"> ★ 3.3.7 - Optical isomerism ★ 3.3.8 - Aldehydes and ketones ★ 3.3.9 - Carboxylic acids and derivatives

	<ul style="list-style-type: none"> ★ 3.3.2 - Alkanes ★ 3.3.3 – Halogenoalkanes <p>MS 0.0, 0.1, 0.2, 0.3, 0.4, 1.1, 1.2, 1.3, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3</p>	<ul style="list-style-type: none"> ★ 3.3.5 - Alcohols ★ 3.3.6 - Organic analysis <p>3.1 - Physical chemistry</p> <ul style="list-style-type: none"> ★ 3.1.5 - Kinetics ★ 3.1.6 - Chemical equilibria, Le Chatelier’s principle and Kc ★ 3.1.7 - Oxidation, reduction and redox equations <p>3.2 - Inorganic chemistry</p> <ul style="list-style-type: none"> ★ 3.2.1 - Periodicity ★ 3.2.2 - Group 2, the alkaline earth metals ★ 3.2.3 - Group 7(17), the halogens <p>MS 0.3, 1.1, 2.2, 2.3, 2.4</p>	<ul style="list-style-type: none"> ★ 3.3.10 - Aromatic chemistry <p>MS 4.1, 4.2, 4.3</p> <p>Application and Review</p> <p>MS 0.0, 0.1, 0.2, 0.3, 0.4, 1.1, 1.2, 1.3, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3</p>
	<p>AS and A-level Chemistry Specification Specifications for first teaching in 2015 (aqa.org.uk) - https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF</p> <p>* Exam Overview – Yr12 Link – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy12chemistry.pdf</p>		
Assessment	<p>The table Assessment Overview - ALevel Chemistry - year 12-2022-23 AH student - http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr122223.pdf - provides a brief guide to when you will be carrying out assessments for A-Level Chemistry in Year 12. Please be aware that this is an approximate guide and the dates of assessments may alter slightly throughout the course, but students will be kept informed of any alterations.</p> <p>All assessments will include past exam questions and give you experience of the types of questions you will see in your final examinations. The revision lists for these assessments can be found in your exam specifications and prior to each assessment you will complete an Exam Workbook to support your preparation for the assessments. You should also use your class notes and CGP revision guides to help you to prepare for these assessments. You can also attend a lunchtime drop in session each week. These sessions are on Monday and Wednesday Lunchtimes, 1.30 – 2.00pm (Lab3/Conf Room)</p>		
E/L	<p>Regular Extended Learning Tasks – Chemistry - Extended Learning Overview</p> <p>http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf</p> <p>Students should regularly review their class notes, committing key information to their long-term memory (vital with the linear assessment style). This will then allow them to seek help with any problem areas of course.</p> <p>At the end of each specification section students will complete an Exam Workbook to consolidate their knowledge and application skills.</p>		

A-LEVEL CHEMISTRY RESOURCES/USEFUL LINKS

Y12	<p>AS and A-level Chemistry Specification Specifications for first teaching in 2015 (aqa.org.uk) - https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF</p> <p>AOA AS and A-level Chemistry AS practical assessment https://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry-7404-7405/as-practical-assessment</p> <p>Assessment Overview - ALevel Chemistry - year 12-2022-23 AH student http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr122223.pdf</p> <p>Chemistry - Extended Learning Overview – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf</p> <p>Exam Overview – Yr12 Link – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy12chemistry.pdf</p>
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The table below provides a brief guide to how the A-Level Chemistry curriculum will be delivered in Year 13, including links to the exam specification and practical and assessment details.

	Autumn Term	Spring Term	Summer Term
Topics	<p>3.3 – Organic Chemistry (A-Level continued) 3.3.11 - Amines</p> <ul style="list-style-type: none"> ★ 3.3.11.1 - Preparation ★ 3.3.11.2 - Base properties ★ 3.3.11.3 - Nucleophilic properties <p>3.3.12 - Polymers</p> <ul style="list-style-type: none"> ★ 3.12.1 - Condensation polymers ★ 3.3.12.2 - Biodegradability and disposal of polymers <p>3.3.13 - Amino Acids, Proteins and DNA</p> <ul style="list-style-type: none"> ★ 3.3.13.1 - Amino acids ★ 3.3.13.2 - Proteins ★ 3.3.13.3 - Enzymes ★ 3.3.13.4 - DNA ★ 3.3.13.5 - Action of anticancer drugs <p>3.3.14 - Organic Synthesis The formation of new organic compounds by multi-step syntheses using reactions included in the specification is covered in this section.</p> <p>3.3.15 - Nuclear Magnetic Resonance Spectroscopy Chemists use a variety of techniques to deduce the structure of compounds. In this section, nuclear magnetic resonance spectroscopy is added to mass spectrometry and infrared spectroscopy as an analytical technique. The emphasis is on the use of analytical data to solve problems rather than on spectroscopic theory.</p> <p>3.3.16 - Chromatography Chromatography provides an important method of separating and identifying components in a mixture. Different types of chromatography are used depending on the composition of mixture to be separated.</p> <ul style="list-style-type: none"> ★ Required practical 12 - Separation of species by thin-layer chromatography. <p>3.1 – Physical Chemistry (A-Level continued) 3.1.8 - Thermodynamics</p> <ul style="list-style-type: none"> ★ 3.1.8.1 - Born–Haber cycles ★ 3.1.8.2 - Gibbs free-energy change, ΔG, and entropy change, ΔS <p>3.1.9 Rate Equations</p> <ul style="list-style-type: none"> ★ 3.1.9.1 - Rate equations ★ 3.1.9.2 - Determination of rate equation ★ Required practical 7 - Measuring the rate of reaction: <ul style="list-style-type: none"> ✓ by an initial rate method ✓ by a continuous monitoring method. <p>3.1.10 Equilibrium Constant Kp for homogeneous systems The further study of equilibria considers how the mathematical expression for the equilibrium constant Kp enables us to calculate how an equilibrium yield will be influenced by the partial pressures of reactants and products. This has important consequences for many industrial processes.</p> <p>3.1.11 - Electrode Potentials and Electrochemical Cells</p> <ul style="list-style-type: none"> ★ 3.1.11.1 - Electrode potentials and cells ★ Required practical 8 - Measuring the EMF of an electrochemical cell. ★ 3.1.11.2 - Commercial applications of electrochemical cells 	<p>3.1 – Physical Chemistry (A-Level continued) 3.1.12 Acids and Bases</p> <ul style="list-style-type: none"> ★ 3.1.12.1 Brønsted–Lowry acid–base equilibria in aqueous solution ★ 3.1.12.2 Definition and determination of pH ★ 3.1.12.3 The ionic product of water, K_w ★ 3.1.12.4 Weak acids and bases K_a for weak acids ★ 3.1.12.5 pH curves, titrations and indicators ★ Required practical 9 - Investigate how pH changes when a weak acid reacts with a strong base and when a strong acid reacts with a weak base. ★ 3.1.12.6 Buffer action <p>3.2 – Inorganic Chemistry (A-Level continued) 3.2.4 - Properties of the Period 3 Elements The reactions of the Period 3 elements with oxygen are considered. The pH of the solutions formed when the oxides react with water illustrates further trends in properties across this period. Explanations of these reactions offer opportunities to develop an in-depth understanding of how and why these reactions occur.</p> <p>3.2.5 - Transition Metals</p> <ul style="list-style-type: none"> ★ 3.2.5.1 General properties of transition metals ★ 3.2.5.2 Substitution reactions ★ 3.2.5.3 Shapes of complex ions ★ 3.2.5.4 Formation of coloured ions ★ 3.2.5.5 Variable oxidation states ★ 3.2.5.6 Catalysts <p>3.2.6 - Reactions of Ions in Aqueous Solution The reactions of transition metal ions in aqueous solution provide a practical opportunity for students to show and to understand how transition metal ions can be identified by test-tube reactions in the laboratory.</p> <ul style="list-style-type: none"> ★ Required practical 11 - Carry out simple test-tube reactions to identify transition metal ions in aqueous solution. 	<p>Application and Review of Chemical Concepts and Skills –</p> <p>A-Level Paper 1</p> <p>3.1.1 - Atomic Structure 3.1.2 - Amounts of Substance 3.1.3 - Bonding 3.1.4 - Energetics 3.1.6 - Chemical Equilibria, Le Chatelier & KC 3.1.7 - Oxidation, Reduction and Redox Equations 3.1.8 - Thermodynamics 3.1.10 - Equilibrium Constant Kp for homogeneous systems 3.1.11 - Electrode Potentials and Electrochemical Cells 3.1.12 - Acids and Bases</p> <p>3.2.1 - Periodicity 3.2.2 - Group 2 3.2.3 - Group 7 3.2.4 - Properties of the Period 3 Elements 3.2.5 - Transition Metals 3.2.6 - Reactions of Ions in Aqueous Solution Practical - All skills/methods related to the topics above.</p> <p>A-Level Paper 2</p> <p>3.1.2 - Amounts of Substance 3.1.3 - Bonding 3.1.4 - Energetics 3.1.5 - Kinetics 3.1.6 - Chemical Equilibria, Le Chatelier & KC 3.1.9 - Rate Equations 3.3.1 - Introduction to Organic Chemistry 3.3.2 - Alkanes 3.3.3 - Halogenoalkanes 3.3.4 - Alkenes 3.3.5 - Alcohols 3.3.6 - Organic Analysis 3.3.7 - Optical Isomerism 3.3.8 - Aldehydes and Ketones 3.3.9 - Carboxylic Acids and Derivatives 3.3.10 - Aromatic Chemistry 3.3.11 - Amines 3.3.12 - Polymers 3.3.13 - Amino Acids, Proteins and DNA 3.3.14 - Organic Synthesis 3.3.15 - Nuclear Magnetic Resonance Spectroscopy 3.3.16 - Chromatography Practical - All skills/methods related to the topics above.</p> <p>A-Level Paper 3</p> <ul style="list-style-type: none"> ★ PRACTICAL & DATA ANALYSIS ★ SYNOPTIC ★ MULTIPLE CHOICE ★ ANY content ★ ANY Practicals
Exam Spec w/link	<p>3.3 – Organic Chemistry (A-Level continued)</p> <ul style="list-style-type: none"> ✓ 3.3.11 - Amines ✓ 3.3.12 - Polymers ✓ 3.3.13 - Amino Acids, Proteins and DNA ✓ 3.3.14 - Organic Synthesis ✓ 3.3.15 - Nuclear Magnetic Resonance Spectroscopy ✓ 3.3.16 - Chromatography 	<p>3.1 – Physical Chemistry (A-Level continued)</p> <ul style="list-style-type: none"> ✓ 3.1.12 - Acids and Bases <p>3.2 - Inorganic chemistry (A-Level)</p> <ul style="list-style-type: none"> ✓ 3.2.4 - Properties of the Period 3 Elements ✓ 3.2.5 - Transition Metals ✓ 3.2.6 - Reactions of Ions in Aqueous Solution <p>MS 0.0, 0.1, 0.4, 2.2, 2.5, 3.1, 3.2, 4.1, 4.2, 4.3,</p>	<p>Exam Overview - ALevel Chemistry-2023</p> <p>* see link below</p>

	<p>3.1 – Physical Chemistry (A-Level continued)</p> <ul style="list-style-type: none"> ✓ 3.1.8 – Thermodynamics ✓ 3.1.9 - Rate Equations ✓ 3.1.10 - Equilibrium Constant Kp for homogeneous systems ✓ 3.1.11 - Electrode Potentials and Electrochemical Cells <p>MS 0.0, 0.4, 1.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5,</p>		
	<p>AS and A-level Chemistry Specification Specifications for first teaching in 2015 (aqa.org.uk) - https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF</p> <p>* Exam Overview - ALevel Chemistry-2023 - link http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy13chemistry.pdf</p>		
Assessment	<p>The table Assessment Overview - ALevel Chemistry - year 13-2022-23 students http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr132223.pdf provides a brief guide to when you will be carrying out assessments for A-Level Chemistry in Year 13. Please be aware that this is an approximate guide and the dates of assessments may alter slightly throughout the course, but students will be kept informed of any alterations.</p> <p>All assessments will include past exam questions and give you experience of the types of questions you will see in you final examinations. The revision lists for these assessments can be found in your exam specifications and prior to each assessment you will complete an Exam Workbook to support your preparation for the assessments. You should also use your class notes and CGP revision guides to help you to prepare for these assessments. You should also be attending lunchtime revision each week. These revision sessions are on a Monday and Wednesday Lunchtimes, 1.30 – 2.00pm (Lab3/Conf Room)</p>		
E/L	<p>Regular Extended Learning Tasks – Chemistry - Extended Learning Overview – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf</p> <p>Students should regularly review their class notes, committing key information to their long-term memory (vital with the linear assessment style). This will then allow them to seek help with any problem areas of course.</p> <p>At the end of each specification section students will complete an Exam Workbook to consolidate their knowledge and application skills.</p>		

A-LEVEL CHEMISTRY RESOURCES/USEFUL LINKS

Y13	<p>AS and A-level Chemistry Specification Specifications for first teaching in 2015 (aqa.org.uk) - https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF</p> <p>AQA AS and A-level Chemistry AS practical assessment https://www.aqa.org.uk/subjects/science/as-and-a-level/chemistry-7404-7405/as-practical-assessment</p> <p>Assessment Overview - ALevel Chemistry - year 13-2022-23 students http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr132223.pdf</p> <p>Chemistry - Extended Learning Overview – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf</p> <p>Exam Overview - ALevel Chemistry-2023 - link http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy13chemistry.pdf</p>
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A Level Physics – Y12			
Physics Specification: https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/PearsonEdexcel-A-level-Physics-Spec.pdf			
Term	Autumn	Spring	Summer
<p>TEACHER A PHYSICS</p> <p>Units Started in these terms may continue into next (Spec statements)</p>	<p>Topic 1: Working as a Physicist (1-8) Statements 1-8 are repeatedly touched upon throughout the course.</p> <p>1 Quantities and units 1.1 Prefixes and alternate units 1.2 Using formulae 1.3 Base and derived units</p> <p>2 Practical skills 2.1 Errors 2.2 Making measurements 2.3 Uncertainties 2.4 Graphs</p> <p>Topic 2: Mechanics (9-30)</p> <p>3 Rectilinear motion 3.1 Speed, velocity, and acceleration (9,12) CP1: Determine g using free-fall (19) 3.2 Projectiles (13,14,15) 3.3 Displacement-time and velocity-time graphs (10,11)</p> <p>4 Momentum 4.1 Linear momentum (21,22) 4.2 Collisions (21,22) 4.3 Momentum and Newton’s laws (21,22) 4.4 Impulsive forces (21,22)</p>	<p>5 Forces 5.1 Nature and types of forces 5.2 Forces in equilibrium (16,17) 5.3 Newton’s second law of motion applied to fixed masses (17) 5.4 Newton’s third law of motion (20) 5.5 Turning forces (23,24)</p> <p>6 Work, energy and power 6.1 Work and energy (25,26,27) 6.2 Principle of conservation of energy (28, 30) 6.3 Power (29)</p> <p>Topic 4: Materials (49-58)</p> <p>12 Fluids 12.1 Properties of fluids 12.2 Density, pressure, and flotation (49,50) 12.3 Moving fluids – streamlines and laminar flow (51) CP4: Determine viscosity of a liquid (52) 12.4 Variations in viscosity (51)</p>	<p>13 Solid materials 13.1 Elastic and plastic deformation 13.2 Properties of solid materials 13.3 Hooke’s law (53,55,58) 13.4 Stress and strain: the Young modulus (54,56,58) CP5: Determine the Young modulus of a material (57)</p> <p>Summer mock preparation</p>
<p>TEACHER B PHYSICS</p> <p>Units Started in these terms may continue into next (Spec statements)</p>	<p>Topic 3: Electric Circuits (31-48)</p> <p>7 Charge and current 7.1 Electric charge (31) 7.2 Electric current (31) 7.3 Current in series and parallel circuits (34) 7.4 Drift velocity (41) 7.5 Metals, semiconductors, and insulators</p> <p>8 Potential difference, electromotive force, and power 8.1 Potential difference (32, 45) 8.2 Using a voltmeter 8.3 Electromotive force (45) 8.4 Power (37) 8.5 Electrical energy (37)</p> <p>9 Current-potential difference relationships 9.1 Varying the potential difference and current in a circuit 9.2 I-V characteristics for a metallic conductor 9.3 Ohm’s law (33) 9.4 Resistance (33) 9.5 I-V characteristics for a tungsten filament lamp (38) 9.6 I-V characteristics for a semiconductor diode (38) 9.7 I-V characteristics for a thermistor (38)</p> <p>10 Resistance and resistivity 10.1 Resistance (33,37) 10.2 Power dissipation in a resistor 10.3 Resistivity (39,42) CP2: Determine resistivity of a material (40) 10.4 Effect of temperature on the resistivity of a metal (47) 10.5 Effect of temperature on the resistivity of a semiconductor (47)</p>	<p>11 Internal resistance, series and parallel circuits, and the potential divider 11.1 Conservation of energy in circuits (35) 11.2 Internal resistance (45) CP3: Determine e.m.f. and internal resistance (46) 11.3 Solar cells 11.4 Measuring the resistance of a component 11.5 Resistors in series (36) 11.6 Resistors in parallel (36) 11.7 Series and parallel combinations 11.8 Current and power calculations in series and parallel circuits 11.9 Principle of the potential divider (43) 11.10 Practical use of a potential divider (44) 11.11 Using a thermistor to control voltage (44) 11.12 Using a light dependent resistor to control voltage (44,48)</p> <p>Topic 5: Waves and Particle Nature of Light (59-96)</p> <p>14 Nature of waves 14.1 Mechanical oscillations and waves (59,61,62,63) 14.2 Electromagnetic waves 14.3 The wave equation (60),</p> <p>15 Transmission and reflection of waves 15.1 Transmission (62,68) CP6: Determine the speed of sound in air (64) 15.2 Reflection (88) 15.3 Refraction (71,72,73,74,88) 15.4 Lenses (75,76, 77,78,79,80,81) 15.5 Polarisation (82) 15.6 Pulse-echo techniques (89)</p>	<p>16 Superposition of waves 16.1 Superposition (65) 16.2 Interference (65,66) 16.3 Standing waves (67) CP7: Standing wave investigation (69) 16.4 Diffraction (88,83,84,86,87) CP8: Determine the wavelength of light using diffraction (85)</p> <p>17 Particle nature of waves 17.1 Some early theories 17.2 Intensity of light (70) 17.3 Photoelectric effect (90,91,92) 17.4 Electron-volt (94) 17.5 Einstein’s photoelectric equation (93) 17.6 Phototube 17.7 Atomic spectra (96) 17.8 Wave-particle duality (95)</p>
Assessments	<p>There are typically two graded assessments within each topic and students will be informed of specific dates two week prior to the exam date. In Year 12 students can achieve grades ranging from U to A. They will also achieve an AtL (Attitude to Learning) score ranging from 1 up to 4. Students’ progress at different rates. A good AtL is the most important factor. Summer mock Exams will take place as per the school’s assessment calendar. Attaining a grade D is a prerequisite of moving onto the second year of the course.</p>		
E/L	<p>Extended learning will be set regularly, typically in the forms of research, exam questions, and practical analysis. All tasks should be completed to the given deadline. For every hour in lesson an hour out of lesson should be spent doing lesson review, revision, and exam question practice.</p>		



A Level Physics – Y13			
Physics Specification: https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/PearsonEdexcel-A-Level-Physics-Spec.pdf			
Term	Autumn	Spring	Summer
<p>TEACHER A PHYSICS</p> <p>Units Started in these terms may continue into next (Spec statements)</p>	<p>Topic 6: Further Mechanics (97-107) 18 Momentum and energy 18.1 Impulse and momentum (97) CP9: Investigate force and momentum (98) 18.2 Work and energy (102) 18.3 Elastic and inelastic collisions (101) 18.4 Collisions in two dimensions (99) CP10: Analysing a collision (100) 18.5 Rockets and jets 19 Motion in a circle 19.1 The language of circular motion (103, 104) 19.2 Centripetal forces (105,106,107) 19.3 Apparent weightlessness</p> <p>Topic 12: Gravitational Fields (174-180) 20 Universal gravitation 20.1 Uniform gravitational fields (174,175,179) 20.2 Newton’s law of gravitation (176,179) 20.3 Radial gravitational fields (177,179) 20.4 Gravitational field and potential (178,180)</p>	<p>Topic 8: Nuclear and Particle Physics (130-143) 24 Electrons and nuclei 24.1 The language of the atom (130) 24.2 Alpha particle scattering (131) 24.3 Thermionic emission (132) 24.4 Some useful algebra (134) 24.5 The cyclotron (133) 24.6 Linear accelerators (133) 24.7 Particle detectors (134) 24.8 Einstein’s equation (137) 24.9 Particles interactions (135) 25 Particle physics 25.1 The discovery of quarks (136) 25.2 Matter and antimatter (141) 25.3 Other mass units (138,165) 25.4 Creation and annihilation of matter (143) 25.5 The standard model (139,143) 25.6 Baryons and mesons (140,142,143) 25.7 Wave-particle duality</p>	<p>Topic 9: Thermodynamics (144-155) 27 Specific heat capacity 27.1 Heating and temperature (147) 27.2 Units of temperature 27.3 Specific heat capacity (144) 27.4 Measuring specific heat capacity (144) CP12: Calibrate a thermistor (145) 28 Internal energy, absolute zero, and change of state 28.1 Historical background 28.2 Internal energy of an ideal gas (147) 28.3 Heating and work 28.4 Change of state (144) CP13: Determine the specific latent heat of a phase change (146) 28.5 Absolute zero (148) 29 Gas laws, and kinetic theory 29.1 Pressure 29.2 The gas laws CP14: Investigate pressure and volume (151) 29.3 Equation of state for an ideal gas (150) 29.4 Evidence for kinetic theory (149,152) 29.5 Kinetic model of temperature (149,152)</p>
<p>TEACHER B PHYSICS</p> <p>Units Started in these terms may continue into next (Spec statements)</p>	<p>Topic 7: Electric and Magnetic Fields (108-129) 21 Electric fields 21.1 Fields in Physics (108) 21.2 Electric forces 21.3 Uniform electric fields (109) 21.4 Making use of electrostatics 21.5 Radial electric fields (110,111) 21.6 Coulomb’s law (110,111) 21.7 Electric field and potential (112,113,114,115) 21.8 Comparing gravitational and electric fields (179) 22 Capacitance 22.1 What are capacitors? (116) 22.2 Energy storage by capacitors (117) 22.3 Capacitors in the real world 22.4 Exponential change 22.5 The exponential function 22.6 Capacitor discharge (118,120) CP11: Charging and discharging a capacitor (119) 23 Magnetic fields 23.1 Magnetic field lines 23.2 How strong are magnetic fields? (121,123) 23.3 D.C. electric motors 23.4 Some useful algebra (122) 23.5 Electron beams 23.6 Changing magnetic flux (121) 23.7 Electromagnetic induction (124,125,126,127) 23.8 The transformer (128,129)</p>	<p>Topic 10: Space (156-163) 30 Astrophysics 30.1 How far are the stars? (157) 30.2 Luminosity and flux (156) 30.3 Standard candles (158) 30.4 The Hertzsprung-Russell diagram (159,160) 30.5 Light from the stars (153,154,155) 31 Cosmology 31.1 How stars begin 31.2 Nuclear binding energy (164,165,166) 31.3 Uranium fission (167) 31.4 Stellar fusion (167) 31.5 The expanding universe (161,162) 31.6 How will the Universe end? (163)</p> <p>Topic 13: Oscillations (181-191) 32 Oscillations 32.1 Simple harmonic motion (181,182) 32.2 The spring (182,183) 32.3 Simple pendulum 32.4 Equations of simple harmonic motion (184,185) 32.5 Energy in simple harmonic motion 32.6 Free, damped, and forced oscillations (188,189,190,191) 32.7 Resonance (186) CP16: Use resonance to determine mass (187)</p>	<p>Topic 11: Nuclear Radiation (164-173) 26 Nuclear decay 26.1 Discovery of radioactivity 26.2 Background radiation (168) 26.3 Dangers of radiation 26.4 Alpha, beta, and gamma radiation (169) 26.5 Disintegration process (170) 26.6 Spontaneous and random nature of radioactive decay (172) 26.7 Half-life (173) 26.8 Experiments involving radioactivity (173) CP15: Investigate the absorption of gamma by lead (171) 26.9 Radioactive dating 26.10 Nuclear medicine</p>
Assessments	There are typically two graded assessments within each topic and students will be informed of specific dates two week prior to the exam date. In Year 13 students can achieve grades ranging from U to A*. They will also achieve an AtL (Attitude to Learning) score ranging from 1 up to 4. Students’ progress at different rates. A good AtL is the most important factor.		
E/L	Extended learning will be set regularly, typically in the forms of research, exam questions, and practical analysis. All tasks should be completed to the given deadline. For every hour in lesson an hour out of lesson should be spent doing lesson review, revision, and exam question practice.		