KS3

KS4

KS5

Key

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

Year 7

Year 8

Year 9 Combined

Year 10 Combined

Year 11 Combined

Year 12 Chemistry

Year 13 Chemistry

Year 10 Biology

Year 11 Biology

Year 12 Biology

Year 13 Biology

Year 10 Chemistry

Year 11 Chemistry

Year 10 Physics

Year 11 Physics

Year 12 Physics

Year 13 Physics

CLICK ME!

Science Curriculum

St Thomas More High School

KS3 Science – Year 7

Science Curriculum
Y7 (2024-2025)

Term	Autumn	Spring	Summer
Units	(BIG PICTURE: ORGANISMS) **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 (BIG PICTURE: MATTER) **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 (BIG PICTURE: FORCES) **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	(BIG PICTURE: ORGANISMS) **B1.2: 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 (BIG PICTURE: MATTER) **C1.2 Atoms** C1.2.1 Elements C1.2.2 Atoms C1.2.3 Compounds C1.2.4 Chemical formulae (BIG PICTURE: WAVES) **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 (BIG PICTURE: WAVES) **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	(BIG PICTURE: GENES) **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 (BIG PICTURE: REACTIONS) **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 (BIG PICTURE: REACTIONS) **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 (BIG PICTURE: EARTH) **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
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
	In the context of the above curriculum areas students are taught about: Scientific attitudes, Experimental skills and investigations, Analysis and evaluation, and Measurement		
Assessments	Baseline Test in September Checkpoint tests after each unit AO1 Exam covering all terms content in December	Checkpoint tests after each unit AO2 Exam covering all terms content in April	Checkpoint tests after each unit AO3 Exam covering all terms content in July
	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.		
Extended Learning	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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

Science Curriculum
Y8 (2024-2025)

Term	Autumn	Spring	Summer
Units	(BIG PICTURE: ORGANISMS) **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 (BIG PICTURE: MATTER) **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 (BIG PICTURE: ELECTRICITY) **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	(BIG PICTURE: ECOSYSTEMS) **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 (BIG PICTURE: MATTER) **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 (BIG PICTURE: ENERGY) **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	(BIG PICTURE: GENES) **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 (BIG PICTURE: REACTIONS) **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 (BIG PICTURE: FORCES) **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
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
	In the context of the above curriculum areas 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 in December.	Checkpoint tests after each unit AO5 Exam covering all terms content in April.	Checkpoint tests after each unit AO6 Exam covering all terms content in July.
	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.		
Extended Learning	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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

Science Curriculum
Y9 (2024-2025)

Combined Specification: https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF
Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF
Chemistry Specification: https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF
Physics Specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF

Term	Autumn	Spring	Summer
TEACHER A **Units Started in these terms may continue into next** **(Exam Spec Ref)**	**B1.1 - Cell Biology** B1.1.1Microscopy (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 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 RP4 Qualitative food tests (4.2.2) B1.4.4 Proteins, catalysts & enzymes (4.2.2) B1.4.5 Factors on enzyme action (4.2.2) B1.4.6 Digestive enzymes (4.2.2) B1.4.7 Making digestion efficient (4.2.2) B1.4.8 RP5 Enzymes (4.2.2) B1.4.9 RP5 Enzymes analysis (4.2.2) B1.4.10 Metabolism and the Liver (4.4.2) B1.4.11 Blood and blood vessels (4.2.2) B1.4.12 The heart (4.2.2) B1.4.13 Circulation (4.2.2) B1.4.14 Helping the heart (4.2.2) **B1.3 – Disease** B1.3.1 Pathogens and disease (4.3.1) B1.3.2 Viral Diseases (4.3.1) B1.3.3 Bacterial diseases (4.3.1) B1.3.4 Fungal and protist diseases (4.3.1) B1.3.5 Human defence response (4.3.1) B1.3.6 Vaccination (4.3.1) B1.3.7 Antibiotics and painkillers (4.3.1)	**C1.5 - Energy Changes** C1.5.1 Recap C1.2 (5.2) C1.5.2 Exothermic and endothermic reactions (5.5.1) C1.5.3 RP4: Temperature changes (5.5.1) C1.5.4 Reaction profiles (5.5.1) C1.5.5 The energy change of reactions HT (5.5.1) **B1.2 - Bioenergetics** B1.2.1 Photosynthesis (4.4.1) B1.2.2 The rate of photosynthesis (4.4.1) B1.2.3 Making the most of photosynthesis HT (4.4.1) B1.2.4 RP6 Photosynthesis (4.4.1) B1.2.5 Aerobic respiration (4.4.2) B1.2.6 Anaerobic respiration (4.4.2) B1.2.7 The response to exercise (4.4.2) B1.2.8 Fermentation (4.4.2) **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 Tissues and organs in plants (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)	**B1.5 – Medical** B1.5.01 Discover & develop drugs (4.3.1) B1.5.02 Health (4.2.2) B1.5.03 CHD (4.2.2) B1.5.04 Risk factors (4.2.2) B1.5.05 Mitosis and the cell cycle (4.1.2) B1.5.06 Cancer (4.1.2) B1.5.07 Stem cells and therapeutic cloning (4.1.2) B1.5.08 Ethics of Stem cells (4.1.2) B1.5.09 Developing monoclonal antibodies HT (4.3.2) (BIO ONLY) B1.5.10 Using monoclonal antibodies HT (4.3.2) (BIO ONLY) B1.5.11 Bacterial growth (4.1.1) (BIO ONLY) B1.5.12 RP Bacterial growth (4.1.1) (BIO ONLY) B1.5.13 Preventing bacterial growth (BIO ONLY) B1.5.14 Plant disease and defence (4.3.3) (BIO ONLY)
TEACHER B **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 Mixtures and Balancing equations (5.1.1) C1.1.3 Development model of atom (5.1.1) C1.1.4 Atomic structure (5.1.1) C1.1.5 Isotopes (5.1.1) C1.1.6 Electronic structure (5.1.1) C1.1.7 The periodic table (5.1.2) C1.1.8 Metals and non- metals (5.1.2) C1.1.9 Group 0 (5.1.2) C1.1.10 Group 1 (5.1.2) C1.1.11 Group 7 (5.1.2) C1.1.12 Relative Formula mass (5.1.1) C1.1.13 Separation Techniques (5.1.1) **C1.2 - Bonding and structure** C1.2.1 Ionic bonding (5.2.1) C1.2.2 Ionic compounds (5.2.2) C1.2.3 Covalent bonds (5.2.1) C1.2.4 Giant covalent compounds (5.2.3) C1.2.5 Allotropes of carbon (5.2.3) C1.2.6 Metallic bonding (5.2.1) C1.2.7 Metals and alloys (5.2.2) C1.2.8 Changes of state (5.2.2) C1.2.9 Polymers (5.2.2)	**P1.1 - Energy Transfer** P1.1.1 Changes in energy stores (6.1.1) P1.1.2 Conservation of energy (6.1.2) P1.1.3 Energy and work (6.5.2) P1.1.4 Gravitational PE stores (6.1.1) P1.1.5 Kinetic and elastic stores (6.1.1) P1.1.6 Energy dissipation and efficiency (6.1.2) P1.1.7 Electrical appliances (6.2.4) P1.1.8 Conduction and convection (6.1.2) P1.1.9 Heating & insulating building (6.1.2) P1.1.10 Energy and the environment (6.1.3) **P1.3 - Particle model** P1.3.1 Density (6.3.1) P1.3.2 RP: Density (6.3.1) P1.3.3 States of matter (6.3.1) P1.3.4 Changes of state (6.3.1) P1.3.5 Internal energy (6.3.2) P1.3.6 Specific heat capacity and latent heat (6.3.2) P1.3.7 RP: SHC (6.3.2) P1.3.8 RP: SHC Analysis and eqs (6.3.2) P1.3.9 Gas pressure (6.3.3)	**C2.9 - Chemistry of atmosphere** C2.9.1 Recap C1.1 (5.1) C2.9.2 Gases in the atmosphere (5.9.1) C2.9.3 O_2 and CO_2 in the atmosphere (5.9.1) C2.9.4 Greenhouse gases (5.9.2) C2.9.5 Global climate change (5.9.2) C2.9.6 Combustion (5.9.2) C2.9.7 Atmospheric pollutants and carbon footprint (5.9.3) C1.9.8 Transition metals (4.1.3) (CHE ONLY) C1.9.9 Nanoparticles and their uses (4.2.4) (CHE ONLY) **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 Radiation in medicine (4.4.3) (PHY ONLY) P1.4.07 Nuclear fission (4.4.4) (PHY ONLY) P1.4.08 Nuclear fusion (4.4.4) (PHY ONLY) P1.4.09 Nuclear issues (4.4.4) (PHY ONLY)
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 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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

GCSE Combined Science – Year 10

KS4 Science Curriculum - Y10 (2024-2025)

Combined Specification: https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF
Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF
Chemistry Specification: https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-8462-SP-2016.PDF
Physics Specification: https://filestore.aqa.org.uk/resources/physics/specifications/AQA-8463-SP-2016.PDF

TEACHER A (6 Lessons per fortnight) next (Exam Spec Ref)

Autumn

P1.2 – Electricity
- P1.2.01 Current and Charge (4.2.1)
- P1.2.02 Potential difference and resistance (4.2.1)
- P1.2.03 RP: Resistance Practical (4.2.1)
- P1.2.04 Component Characteristics (4.2.1)
- P1.2.05 RP: Component Characteristics (4.2.1)
- P1.2.06 Series circuits (4.2.2)
- P1.2.07 Parallel circuits (4.2.2)
- P1.2.08 Alternating Current (4.2.3)
- P1.2.09 Cables and plugs (4.2.3)
- P1.2.10 Practical: Wiring a plug (4.2.3)
- P1.2.11 Electrical power and pd (4.2.4)
- P1.2.12 Electrical currents and energy transfer (4.2.4)
- P1.2.13 Static (4.2.5) (PHY ONLY)

C2.6 Rates of Reaction
- C2.6.01 Calculating rates of reactions (5.6.1)
- C2.6.02 Interpreting ROR graphs (5.6.1)
- C2.6.03 Effect of temperature on RoR (5.6.1)
- C2.6.04 Effect of concentration on RoR (5.6.1)
- C2.6.05 Effect of surface area on RoR (5.6.1)
- C2.6.07 Catalysts and pressure (5.6.1)
- C2.6.08 RP: Rates of reaction (5.6.1)
- C2.6.09 Collision theory & activation energy (5.6.1)
- C2.6.10 Reversible reactions (5.6.2)
- C2.6.11 Equilibrium (5.6.2)
- C2.6.12 Le Chatelier's principle HT (5.6.2)

P2.5a Forces
- P2.5a.01 Introduction to forces (4.5.1)
- P2.5a.02 Resultant forces (4.5.1)
- P2.5a.03 Moments at work (4.5.4) (PHY ONLY)
- P2.5a.04 More about levers and gears (4.5.4) (PHY ONLY)
- P2.5a.05 Centre of mass (4.5.1)
- P2.5a.06 Moments and equilibrium (4.5.4) (PHY ONLY)
- P2.5a.07 The parallelogram of forces (4.5.1)
- P2.5a.08 Resolution of forces (4.5.1)
- P2.5a.09 Forces and elasticity (4.5.3)
- P2.5a.10 RP: Hooke's law (4.5.3)
- P2.5a.11 Pressure and surfaces (4.5.5) (PHY ONLY)
- P2.5a.12 Pressure in a liquid at rest (4.5.5) (PHY ONLY)

Spring

- P2.5a.13 Atmospheric pressure (4.5.5) (PHY ONLY)
- P2.5a.14 Upthrust and floatation (4.5.5) (PHY ONLY)

C2.10 Using resources.
- C2.10.01 Using Earths resources and sustainable development (4.10.1)
- C2.10.02 Potable water (4.10.1)
- C2.10.03 RP: Water purification (4.10.1)
- C2.10.04 Wastewater treatment (4.10.1)
- C2.10.05 Alternative ways of extracting metals HT (4.10.1)
- C2.10.06 Lifecycle assessments (4.10.2)
- C2.10.07 Reducing the use of resources (5.10.2)
- C2.10.08 Corrosion and its prevention (4.10.3) (CHE ONLY)
- C2.10.09 Alloys as useful materials (4.10.3) (CHE ONLY)
- C2.10.10 Ceramics, polymers, and composites (4.10.3) (CHE ONLY)
- C2.10.11 Haber process and use of NPK fertilisers (4.10.4) (CHE ONLY)
- C2.10.12 Production and uses of NPK fertilisers (4.10.4) (CHE ONLY)

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 motion graphs (4.5.6)
- P2.5b.04 Forces and acceleration (4.5.6)
- P2.5b.05 RP: Acceleration (4.5.6)
- P2.5b.07 Weight and terminal velocity (4.5.6)
- P2.5b.08 Forces and braking (4.5.6)
- P2.5b.09 Conservation of momentum (4.5.7) (PHY ONLY)
- P2.5b.10 Impact forces (4.5.7) (PHY ONLY)
- P2.5b.11 Safety first (4.5.6) (PHY ONLY)

C1.3 Quantitative Chemistry
- C1.3.01 C1.1 Atomic and mass number recap
- C1.3.02 Conservation of mass and balancing equations
- C1.3.03 Relative formula mass
- C1.3.04 Chemical measurements (4.3.1)
- C1.3.05 Moles HT (4.3.2)
- C1.3.06 Amounts of substances in equations HT (4.3.2)

Summer

- C1.3.07 Using moles to balance equations HT (4.3.2)
- C1.3.08 Limiting reactions HT (4.3.2)
- C1.3.09 Concentrations of Solutions (4.3.2)
- C1.3.10 Percentage yield (4.3.3) (CHE ONLY)
- C1.3.11 Atom economy (4.3.3) (CHE ONLY)
- C1.3.12 Using concentrations of solutions in mol/dm3 HT (4.3.4) (CHE ONLY)
- C1.3.13 Use of amount of substance in relation to volumes of gases HT (4.3.5) (CHE ONLY)

P2.6 Waves
- P2.6.01 The nature of waves (4.6.1)
- P2.6.02 Reflection and refraction (4.6.1)
- P2.6.03 Sound waves (4.6.1) (PHY ONLY)
- P2.6.04 RP: Waves (4.6.1)
- P2.6.05 Ultrasound and Seismic waves (4.6.1) (PHY ONLY)
- P2.6.06 The electromagnetic spectrum (4.6.2) (PHY ONLY)
- P2.6.07 Light, infrared, microwaves and radio waves (4.6.2)
- P2.6.08 RP: Leslie Cube (4.6.2)
- P2.6.09 Communications (4.6.2)
- P2.6.10 Ultraviolet waves, X-rays, and gamma rays (4.6.2)
- P2.6.11 X-rays in medicine (4.6.2)
- P2.6.12 Reflection and refraction of light (4.6.2) (PHY ONLY)
- P2.6.13 RP: Reflection and Refraction DEMO & Practical (4.6.2) (PHY ONLY)
- P2.6.14 Light and colour (4.6.2) (PHY ONLY)
- P2.6.15 Lenses (4.6.2) (PHY ONLY)

TEACHER B (5 Lessons per fortnight) (Exam Spec Ref)

Autumn

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 Tissues and organs in plants (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 (4.6.1)
- B2.9.03 Inherited disorders (4.6.1)
- B2.9.04 History and Future (4.6.3)
- B2.9.05 Genetic counselling (4.6.1)
- B2.9.06 DNA Structure (4.6.1) (BIO ONLY)
- B2.9.07 Protein synthesis (4.6.1) (BIO ONLY)
- B2.9.08 Mutation (4.6.1) (BIO ONLY)
- B2.9.09 Types of reproduction (4.6.1)
- B2.9.10 Meiosis (4.6.1)
- B2.9.11 Best of both worlds (4.6.1) (BIO ONLY)

B2.10 Evolution
- B2.10.01 Evolution by natural selection (4.6.2)
- B2.10.02 Theories of evolution (4.6.3) (BIO ONLY)
- B2.10.03 Evolution and speciation (4.6.2) (BIO ONLY)
- 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) (BIO ONLY)

Spring

- B2.10.10 Adult Cell Cloning (4.6.2) (BIO ONLY)
- B2.10.11 Classification (4.6.4)
- B2.10.12 New systems of classification (4.6.4)

C1.4 Chemical Change
- C1.3.01 C1.2 Review
- C1.3.02 Metal Oxides
- C1.3.03 The reactivity series
- C1.3.04 Extraction and reduction of metals
- C1.3.05 Oxidation and reduction in terms of electrons HT
- C1.3.06 Acids and metals and metal carbonates
- C1.3.07 Neutralisation and salt production
- C1.3.08 RP: Making Soluble salts.
- C1.3.09 pH Scale and neutralisation
- C1.3.10 RP: Neutralisation using titration (CHE ONLY)
- C1.3.11 Titration calculations (CHE ONLY)
- C1.3.12 Strong and weak acids HT
- C1.3.13 Electrolysis
- C1.3.14 Metal extraction using electrolysis
- C1.3.15 Electrolysis of aqueous solutions inc. representation of reactions at electrodes as half equations HT

B2.7 – Ecosystems
- B2.7.01 Communities (4.7.1)
- B2.7.02 Abiotic and biotic factors (4.7.1)
- B2.7.03 Distribution and abundance (4.7.2)
- B2.7.04 Systematic sampling (4.7.2)
- B2.7.05 RP Sampling (4.7.2)
- B2.7.06 Competition (4.7.1)
- B2.7.07 Types of adaptation (4.7.1)

Summer

- B2.7.08 Adaptations (4.7.1)
- B2.7.09 Feeding relationships (4.7.2)
- B2.7.10 Predator prey relationships (4.7.2)
- B2.7.11 Decomposition (4.7.2)
- B2.7.12 RP10 Decay (BIO ONLY)
- B2.7.13 Cycling Materials (4.7.2)

B2.8 – Ecology
- B2.8.01 Waste management (4.7.3)
- B2.8.02 Air pollution (4.7.3)
- B2.8.03 Indicator species HT (4.7.3) (BIO ONLY)
- B2.8.04 Land Use (4.7.3)
- B2.8.05 Biogas (4.7.3) (BIO ONLY)
- B2.8.06 Biodiversity (4.7.3)
- B2.8.07 Pyramid of Biomass (4.7.4) (BIO ONLY)
- B2.8.08 Biomass transfer (4.7.4) (BIO ONLY)
- B2.8.09 Food security (4.7.5) (BIO ONLY)
- B2.8.10 Farming techniques (4.7.5) (BIO ONLY)
- B2.8.11 Using Biotechnology (4.7.5) (BIO ONLY)

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.
Extended Learning	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.
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.

GCSE Combined Science Curriculum
Y11 (2024-2025)

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

Term	Autumn	Spring	Summer
TEACHER A **(4 lessons a cycle)** **Units Started in these terms may continue into next.** **(Exam Spec Ref)**	**B2.8 – Ecology** B2.8.01 Waste management (4.7.3) B2.8.02 Air pollution (4.7.3) B2.8.04 Land Use (Deforestation and Peat) (4.7.3) B2.8.06 Biodiversity (4.7.3) **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)	**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)	**Exam Preparation**
TEACHER B **(4 lessons a cycle)** **Units Started in these terms may continue into next.** **(Exam Spec Ref)**	**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) **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) **P2.5b 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 motion graphs (4.5.6) P2.5b.04 Forces and acceleration (4.5.6) P2.5b.05 RP: Acceleration (4.5.6) P2.5b.07 Weight and terminal velocity (4.5.6) P2.5b.08 Forces and braking (4.5.6)	**P2.6 Waves** P2.6.01 The nature of waves (4.6.1) P2.6.02 Reflection and refraction (4.6.1) P2.6.04 RP: Waves (4.6.1) P2.6.07 Light, infrared, microwaves and radio waves (4.6.2) P2.6.08 RP: Leslie Cube (4.6.2) P2.6.09 Communications (4.6.2) P2.6.10 Ultraviolet waves, X-rays, and gamma rays (4.6.2) P2.6.11 X-rays in medicine (4.6.2)	**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.		
Extended Learning	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.		
ers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

GCSE Biology – Year 10

GCSE Biology Curriculum
Y10 (2023-2024)

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.		
Extended Learning	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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career’s focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

GCSE Biology Curriculum
Y11 (2024-2024)

Biology Specification: https://filestore.aqa.org.uk/resources/biology/specifications/AQA-8461-SP-2016.PDF

Term	Autumn	Spring	Summer
Biology (4 Lessons per fortnight) **Units Started in these terms may continue into next (Exam Spec Ref)**	**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.		
Extended Learning	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.		
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GCSE Chemistry Curriculum
Y10 (2023-2024)

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)**	**C2.6 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)	**C1.4 Chemical changes** C1.4.01 Recap C1.2 Atoms and ions C1.4.02 Metal 0xides (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)	**C1.3 Quantitative Chemistry** C1.3.01 C1.1 Atomic and mass number recap C1.3.02 Conservation of mass and balancing equations C1.3.03 Relative formula mass C1.3.04 Mass changes C1.3.05 Chemical measurements (4.3.1) C1.3.06 Moles HT (4.3.2) C1.3.07 Amounts of substances in equations HT (4.3.2) C1.3.08 Using moles to balance equations HT (4.3.2) C1.3.09 Limiting reactions HT (4.3.2) C1.3.10 Concentrations of Solutions (4.3.2) C1.3.11 Percentage yield (4.3.3) C1.3.12 Atom economy (4.3.3) C1.3.13 Using concentrations of solutions in mol/dm3 HT (4.3.4) C1.3.14 Use of amount of substance in relation to volumes of gases HT (4.3.5)
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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Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

GCSE Chemistry Curriculum
Y11 (2023-2024)

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)**	**C2.7 Organic chemistry** C2.7.01 - C1.2 Covalent bonding recap C2.7.02 Crude oil, hydrocarbons and alkanes C2.7.03 Fractional distillation C2.7.04 Properties of hydrocarbons C2.7.05 Combustion C2.7.06 Cracking C2.7.07 Alkenes C2.7.08 Reactions of alkenes C2.7.09 Alcohols C2.7.10 Reactions of alcohols C2.7.11 Carboxylic acids C2.7.12 Esters C2.7.13 Addition polymerisation C2.7.14 Condensation polymerisation (H) C2.7.15 DNA and naturally occurring polymers	**C2.8 Chemical analysis** C2.8.01 - C1.2 Ionic equations and electrolysis recap C2.8.02 Pure substances C2.8.03 Formulations C2.8.04 Chromatography and Rf values C2.8.05 RP6: Chromatography C2.8.06 Gas tests C2.8.07 Flame tests C2.8.08 Metal hydroxides C2.8.09 Testing for carbonates, halides and sulphates C2.8.10 RP7: Identifying ions. C2.8.11 Instrumental methods	**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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GCSE Physics Year 10

GCSE Physics Curriculum
Y10 (2023-2024)

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)**	**P1.3 - Particle model** P1.3.12 Gas pressure and temperature (4.3.3) P1.3.13 Gas pressure and volume (4.3.3) **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.		
Extended Learning	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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

GCSE Physics Curriculum
Y11 (2024-2025)

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, 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, 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.		
Extended Learning	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.		
Careers	Every unit of study includes a case study of careers linked to the subject content of that unit. Students are challenged to discuss interesting points that arise. Each term students are encouraged to complete an extended learning challenge with a career's focus. Displays, throughout the department, inform students on the wide and varied range of science careers. Guided reading tasks throughout the year engage students in careers case studies.		

A-Level Biology Curriculum
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
B1.01) Biological Molecules • 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 **B1.02) Enzymes** • 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) **B1.03) Cells** • 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) **B1.04) DNA and Protein Synthesis** • 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) **B1.05) The Cell Cycle** • DNA replication (3.1.5) • Mitosis (3.2.2) • RP2: Mitosis (3.2.2) • Cell cycle and Cancer • Cell cycle and Prokaryotes •	**B1.06) Immune System** • 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) **B1.07) Gaseous Exchange** • 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) • Analysing health data (3.3.2) • Standard deviation (3.4.7) • Gas exchange in plants (3.3.2) **B1.08) Digestion and Absorption** • Digesting carbohydrates (3.3.3) • Digesting proteins (3.3.3) • Digesting lipids (3.3.3) **B1.09) Mass transport in Animals** • 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) **B1.10) Mass transport in Plants** • Transpiration (3.1.7, 3.3.4) • Translocation (3.3.4) **B1.11) Genetic Diversity** • 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)	**B1.12) Species and Taxonomy** • Classification and taxonomy (3.4.5) • Methods of classification (3.4.7) **B1.13) Biodiversity within a community** • Investigating diversity (3.4.6) • Measuring diversity (3.4.6) • Farming and Biodiversity (3.4.6) **AS EXAMS** **B2.09) Populations in Ecosystems** • Ecosystems (3.7.4) • Competition (3.7.4) • Field studies (3.7.4) • RP12: Field Studies (3.7.4)

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 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. 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. 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.
Extended Learning	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.

A-Level Biology Curriculum
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
B2.01) Energy Transfer • 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) **B2.02) Nutrient Cycles** • 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) **B2.03) Response** • 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) **B2.04) Nervous Coordination** • Resting potential (3.6.2) • Action potential (3.6.2) • Myelinated neurones (3.6.2) • Synapses (3.6.2) **B2.05) Muscles and movement** • Muscle contractions (3.6.3) • Limits on activity (3.6.3) • Controlling Muscle contraction (3.6.3) • Different muscle fibres (3.6.3)	**B2.06) Internal Conditions** • Endocrine system (3.6.4) • Glucose uptake (3.6.4) • Falling glucose levels (3.6.4) • RP11: Quantitative test for glucose • Osmoregulation (3.6.4) • The Kidney (3.6.4) **B2.07) Genes, alleles, and inheritance** • 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) **B2.08) Gene pools, selection, and speciation** • Gene pools (3.7.2) • Selection (3.7.3) • Speciation (3.7.3) • Genetic Drift (3.7.3) **B2.10) Control of gene expression** • 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) **B2.11) Gene cloning and gene transfer** • 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)	**12) Using gene technology** • Sanger sequencing (3.8.3) • Locating alleles in genes (3.8.4) • Genetic finger printing (3.8.4) • Genetic counselling (3.8.4) **Synoptic Essays** **A-LEVEL EXAMS**

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 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.
Extended Learning	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.

A -Level Chemistry – Year 12

A Level Chemistry Curriculum Y12

Chemistry Specification: https://filestore.aqa.org.uk/resources/chemistry/specifications/AQA-7404-7405-SP-2015.PDF

Term	Autumn	Spring	Summer
TEACHER A **Units Started in these terms may continue into next** **(Spec statements)**	3.1 - Physical chemistry 3.1.1 - Atomic structure 3.1.1.1 Fundamental particles 3.1.1.2 Mass number and isotopes 3.1.1.3 Electron configuration 3.1.2 - Amount of substance 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 3.1.3 - Bonding 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 3.1.4 - Energetics 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 3.1.2 - Amount of substance Required practical 1 - Make up a volumetric solution and carry out a simple acid–base titration. Required practical 2 - Measurement of an enthalpy change.	3.1.5 - Kinetics 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 3.1.6 - Chemical equilibria, Le Chatelier's principle and Kc 3.1.6.1 Chemical equilibria and Le Chatelier's principle 3.1.6.2 Equilibrium constant Kc for homogeneous systems 3.1.5 - Kinetics Required practical 3 - Investigation of how the rate of a reaction changes with temperature. 3.2.3 - Group 7(17), the halogens Required practical 4 - Carry out simple test-tube reactions to identify: cations – Group 2, NH_4^+, anions – Group 7 (halide ions), OH^-, CO_3^{2-}, SO_4^{2-} 3.3.5 - Alcohols Required practical 5 - Distillation of a product from a reaction. 3.3.6 - Organic analysis Required practical 6 - Tests for alcohol, aldehyde, alkene and carboxylic acid.	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. 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. 3.3.9 - Carboxylic acids and derivatives Required practical 10 - Preparation of: a pure organic solid and test of its purity a pure organic liquid.
TEACHER B **Units Started in these terms may continue into next** **(Spec statements)**	3.3 - Organic chemistry 3.3.1 - Introduction to organic chemistry 3.3.1.1 Nomenclature 3.3.1.2 Reaction mechanisms 3.3.1.3 Isomerism 3.3.2 - Alkanes 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 3.3.3 - Halogenoalkanes 3.3.3.1 Nucleophilic substitution 3.3.3.2 Elimination 3.3.3.3 Ozone depletion 3.3.4 - Alkenes 3.3.4.1 Structure, bonding and reactivity 3.3.4.2 Addition reactions of alkenes 3.3.4.3 Addition polymers 3.3.5 - Alcohols 3.3.5.1 Alcohol production 3.3.5.2 Oxidation of alcohols 3.3.5.3 Elimination 3.3.6 - Organic analysis 3.3.6.1 Identification of functional groups by test-tube reactions 3.3.6.2 Mass spectrometry 3.3.6.3 Infrared spectroscopy	3.1.7 - Oxidation, reduction, and redox equations 3.2 - Inorganic chemistry 3.2.1 - Periodicity 3.2.1.1 Classification 3.2.1.2 Physical properties of Period 3 elements 3.2.2 - Group 2, the alkaline earth metals 3.2.3 - Group 7(17), the halogens 3.2.3.1 Trends in properties 3.2.3.2 Uses of chlorine and chlorate(I)	3.3 – Organic Chemistry (A-Level) 3.3.7 - Optical isomerism 3.3.8 - Aldehydes and ketones 3.3.9 - Carboxylic acids and derivatives 3.3.9.1 Carboxylic acids and esters 3.3.9.2 Acylation 3.3.10 - Aromatic chemistry 3.3.10.1 Bonding 3.3.10.2 Electrophilic substitution 3.3.11 - Amines 3.3.11.1 - Preparation 3.3.11.2 - Base properties 3.3.11.3 - Nucleophilic properties
Assessments	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. 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 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)		
Extended Learning	**Regular Extended Learning Tasks – Chemistry - Extended Learning Overview** http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf 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. At the end of each specification section students will complete an Exam Workbook to consolidate their knowledge and application skills.		

A-LEVEL CHEMISTRY RESOURCES/USEFUL LINKS

Y12	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 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 Assessment Overview - ALevel Chemistry - year 12-2022-23 AH student http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr122223.pdf **Chemistry - Extended Learning Overview –**

	http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf Exam Overview – Yr12 Link – http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy12chemistry.pdf

A- Level Chemistry – Year 13

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.

A Level Chemistry Curriculum Y13

Chemistry Specification:

Term	Autumn	Spring	Summer
TEACHER A **Units Started in these terms may continue into next (Spec statements)**	3.1 – Physical Chemistry 3.1.8 - Thermodynamics 3.1.8.1 - Born–Haber cycles 3.1.8.2 - Gibbs free-energy change, ΔG, and entropy change, ΔS 3.1.9 Rate Equations 3.1.9.1 - Rate equations 3.1.9.2 - Determination of rate equation Required practical 7 - Measuring the rate of reaction: by an initial rate method by a continuous monitoring method. 3.1.10 Equilibrium Constant Kp for homogeneous systems 3.1.11 - Electrode Potentials and Electrochemical Cells 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 3.1.12 Acids and Bases 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, KW 3.1.12.4 Weak acids and bases Ka 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 3.3.16 - Chromatography Required practical 12 - Separation of species by thin-layer chromatography.	3.2 – Inorganic Chemistry 3.2.4 - Properties of the Period 3 Elements 3.2.5 - Transition Metals 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 3.2.6 - Reactions of Ions in Aqueous Solution Required practical 11 - Carry out simple test-tube reactions to identify transition metal ions in aqueous solution.	Application and Review of Chemical Concepts and Skills – A-Level 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 3.1.8 - Thermodynamics 3.1.10 - Equilibrium Constant Kp for homogeneous systems 3.1.11 - Electrode Potentials and Electrochemical Cells 3.1.12 - Acids and Bases 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. A-Level 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 3.1.9 - 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. A-Level Paper 3 PRACTICAL & DATA ANALYSIS SYNOPTIC MULTIPLE CHOICE ANY content ANY Practicals
TEACHER B **Units Started in these terms may continue into next (Spec statements)**	3.3 – Organic Chemistry 3.3.12 - Polymers 3.12.1 - Condensation polymers 3.3.12.2 - Biodegradability and disposal of polymers 3.3.13 - Amino Acids, Proteins and DNA 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 3.3.14 - Organic Synthesis 3.3.15 - Nuclear Magnetic Resonance Spectroscopy 3.3.16 - Chromatography		
Assessments	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. 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)		
Extended Learning	**Regular Extended Learning Tasks – Chemistry - Extended Learning Overview –** http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf 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. At the end of each specification section students will complete an Exam Workbook to consolidate their knowledge and application skills.		

A-LEVEL CHEMISTRY RESOURCES/USEFUL LINKS

Y13	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 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 Assessment Overview - ALevel Chemistry - year 13-2022-23 students http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/assessoverviewalevelchemyr132223.pdf **Chemistry - Extended Learning Overview –** http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/chemextlearning.pdf Exam Overview - ALevel Chemistry-2023 - link http://www.st-thomasmore.southend.sch.uk/uploads/documents/curriculum/chemistry-curric/examoverviewy13chemistry.pdf

A Level Physics Curriculum Y12

Physics Specification: https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/PearsonEdexcel-Alevel-Physics-Spec.pdf

Term	Autumn	Spring	Summer
TEACHER A **Units Started in these terms may continue into next** **(Spec statements)**	**Topic 1: Working as a Physicist (1-8)** **2 Practical skills** 2.1 Errors 2.2 Making measurements 2.3 Uncertainties 2.4 Graphs **Topic 2: Mechanics (9-30)** **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) **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)	**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) **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) **Topic 4: Materials (49-58)** **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)	**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) **Topic 5: Waves and Particle Nature of Light (59-96)** CP6: Determine the speed of sound in air (64)
TEACHER B **Units Started in these terms may continue into next** **(Spec statements)**	**Topic 1: Working as a Physicist (1-8)** **1 Quantities and units** 1.1 Prefixes and alternate units 1.2 Using formulae 1.3 Base and derived units **Topic 3: Electric Circuits (31-48)** **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 **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) **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)	**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) **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)	**Topic 5: Waves and Particle Nature of Light (59-96)** **14 Nature of waves** 14.1 Mechanical oscillations and waves (59,61,62,63) 14.2 Electromagnetic waves 14.3 The wave equation (60, **15 Transmission and reflection of waves** 15.1 Transmission (62,68) 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) **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) **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)
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 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.		
Extended Learning	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.		

A Level Physics
Y13

Physics Specification:
https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/PearsonEdexcel-Alevel-Physics-Spec.pdf

Term	Autumn	Spring	Summer
TEACHER A **Units Started in these terms may continue into next (Spec statements)**	**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 **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)	**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	**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)
TEACHER B **Units Started in these terms may continue into next (Spec statements)**	**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)	**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) **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)	**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
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.		
Extended Learning	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.		

Key Stage	Careers in the curriculum
KS3	•
KS4	•
KS5	•

CAREERS