

Year 10 Combined Science

Students who opt to follow the Combined Science route continue to build on the knowledge and understanding gained from Year 9. Topics studied in Year 9 align with the combined science (trilogy) AQA specification so the transition from Year 9 to 10 is smooth. Through Year 10, students study topics that build in complexity and utilise learning from earlier topics. We are not just building knowledge, science skills are developed through practical work which includes the required practicals, but many others also. Students are assessed at the start and end of the year with tests that check learning on topics in Year 9 and Year 10. This continues to build in demand as students progress through the GCSE course as more and more content is covered in the test. Additionally, there is a PPE in April which has a similar arrangement to the other assessments but takes place in a more formal setting. Lessons include regular retrieval practice and past paper questions to build up recall and application skills. Students are taught by two teachers, one taking 5 lessons a fortnight, the other taking 4 lessons.

Methods of deepening and securing knowledge:	
Retrieval practice	Most lessons have retrieval practice in them, usually as a starter activity. Past paper questions are also used in most lessons to review both recent learning and learning from longer ago.
Interleaving	Retrieval practice includes interleaved questions from previous topics, making connections between topics where possible. Revision lessons are dispersed through the year so previous learning is revisited periodically.

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Topic(s)	C9 – Chemistry of the atmosphere - The earth's atmosphere - Global climate change - Air pollution P4 – Atomic structure - The atom - Alpha particle scattering - Properties of radiation - Alpha beta decay - Half life - Irradiation and contamination B3 – Infection and response - Human defence systems		C6 – The rate and extent of chemical changes - Surface area - The effect of concentration - The effect of temperature - The effect of a catalyst - Reversible reactions - Dynamic equilibrium P3 – Particle model of matter - Change of state - Density of materials - Internal energy - Temperature changes - Particle motion in gases		B5 – Homeostasis and response - Human nervous system - Synapses - Human endocrine system - Blood glucose and diabetes - Negative feedback loops - Human reproduction - Contraception - Infertility treatment B7 – Ecology - Communities - Environmental sampling - Competition in plants - Competition in animals	

	<ul style="list-style-type: none"> - Vaccination - Antibiotics and pain killers - Discovery and development of drugs - Plant diseases <p>P1 - Energy</p> <ul style="list-style-type: none"> - Thermal insulation - Power - Gravitational potential energy - Kinetic energy - Elastic potential energy - Energy equations - Specific heat capacity. <p>B4 - Bioenergetics</p> <ul style="list-style-type: none"> - Photosynthesis - Using glucose - Respiration - Exercise - Metabolism 	<p>C7 – Organic chemistry</p> <ul style="list-style-type: none"> - Crude oil and alkanes - Fractional distillation - Combustion of alkanes - Cracking a hydrocarbon <p>P2 – Electricity</p> <ul style="list-style-type: none"> - Current and charge - Current in circuits - Potential difference in circuits - Explaining resistance - Ohms law - Lamp, diode, thermistor, LDR - The national grid - AC and DC - Wiring a 3 pin plug - Power and Power losses - Transformer equations - Energy transfers in appliances <p>C8 – Chemical analysis</p> <ul style="list-style-type: none"> - Substances and formulations - Chromatography - Testing for gases 	<ul style="list-style-type: none"> - Adapt and survive - Feeding relationships <p>C10 – Using resources</p> <ul style="list-style-type: none"> - The earth’s resources and sustainability - Potable water - Treating waste water - Phytomining and bioleaching - Life cycle assessment and recycling - Alloys - Polymers - Ceramics, polymers and composites 			
Assessment	Aiming High 1 test including topics studies up to this point in Year 10 and the Year 9 topics			PPE: A full past paper in Biology and Physics. A mixed paper of topics covers in Years 9 and 10 for chemistry		Aiming High 3 test covering all Year 10 topics

Independent Learning:

Independent learning is set every week in line with the school policy. We set online work on Educake which reviews previous learning in a quiz-like format. Additionally we utilise 'knowledge organiser' booklets to set students tasks to produce revision material from allocated pages. We also set 'language for learning' tasks every half term which requires students to complete a quiz on tier 2 and 3 words encountered in the science course.