

Curriculum Intent:

Curriculum Intent Science



*We aim to **stoke your curiosity and better your understanding about the world around you.***

You will have the opportunity to:

- **Gain investigative skills**, allowing you to question and inquire.
- **Expand your scientific knowledge** about the world you live in.
- Improve and develop existing numeracy, literacy and problem solving skills



Respect ■ Determination ■ Ambition ■ Tolerance ■ Integrity 1

During KS3 pupils will develop an appreciation for the fundamentals of how the world works. Students will develop their scientific thinking and curiosity through theory and investigation. Their factual knowledge will cover a wide range of scientific topics, allowing them insight into the three main subject areas: Biology, Chemistry and Physics, focussing on key ideas. In Biology this ranges from understanding of cells and microscopic level of life through to large scale understanding of life processes in ecology. Chemistry focuses on the study of the atom and the importance of how atoms interact through to the macroscopic effects on the atmosphere and key resources. In Physics, students study key ideas around Energy, Forces and waves to explain the underlying processes of the Universe. Students will develop and apply basic mathematical skills to a range of scientific contexts. Pupils will be introduced to a variety of new terms and will learn to effectively use these to better communicate scientific ideas. Overall this curriculum will give students the knowledge, skills and character to excel and spark their curiosity to learn more. Students will also be exposed to careers and learn about the types of careers that would use the knowledge they will learn about in each of their topics.

'Why This, Why Now?'

In our planning, we have asked ourselves 'why this, why now?' Here we provide some examples of the curriculum choices we have made, and why the units have been placed in the order we have chosen:

- In year 9 we focus on developing further from year 7 content so 9PF follows on successfully from 7PF and extends students understanding of the interactions of forces.



Medium Term Planning Document: Science Year 9

The Medium Term Planning document below is designed to show the journey that every student takes through our curriculum. Some elements of the curriculum may be taught over several lessons, others in a single lesson.

Science	HT1			
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
9PF – Forces in action	Forces and their effects	Moment Pivot	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 1 – Forces in Action'
	Moments	Force Multiplier		
	Work done	Load		
	Simple machines	Effort		
	Hooke's law	Hooke's Law Deformation Equilibrium		
9CR – Reactivity	Atomic structure	Malleable	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 2 – Reactivity'
	Reactions and bonding	Ductile Sonorous Lustrous		
	Formula mass	Electrical Conductor Oxide		
	Acids and metals	Reactivity Series Alkali metals Displacement reaction Chemical Formulae		

Medium Term Planning Document: Science Year 9

Science	Year 9 – Half Term 2			
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
9CR – Reactivity	Acids and alkalis	Malleable	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 2 – Reactivity'
	Making salts	Ductile		
	Reactivity series	Sonorous		
	Metal extraction	Lustrous		
	Properties and uses of metals	Electrical Conductor Oxide Reactivity Series Alkali metals Displacement reaction Chemical Formulae		
9BB – Biological systems and processes	Musculoskeletal system	Antagonistic muscles Tendon	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 5 – Biological Systems and Processes'
	Respiratory system	Ligament		
	Effects of exercise	Carcinogen		
	Effects of drugs	Nicotine Drug		
	DNA and inheritance	Alveoli Diffusion Aerobic respiration Anaerobic respiration DNA Double Helix Chromosome		

Medium Term Planning Document: Science Year 9

Science	Year 9 HT3			
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
9CE – Energetics and rates	Measuring rates	Pressure	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 3 – Energetics and Rates'
	Concentration and rates	Pascal (Pa) Upthrust		
	Surface area and rates	Sublimation Brownian Motion		
	Catalysts	Density		
	Endothermic and exothermic reactions	Chemical changes Physical changes		
	Combustion	Fluid		
	Thermal decomposition	Atmospheric Pressure		
9PS – Sound waves	Waves	Transverse Waves	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 4 – Sound Waves'
	Sound waves	Longitudinal Waves		
	How do we hear?	Mechanical Waves Wave Amplitude		
	Ultrasound	Wavelength Frequency Pitch		
	Microphones and speakers	Hertz (Hz)		
		Echo Ultrasound Sonar		

Medium Term Planning Document: Science Year 9

Science		Yr 9 HT4		
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
GCSE Biology – B7 - Ecology	Communities and Ecosystems	Abiotic factors Adaptation Biodiversity Biotic factors Community Competition Deforestation Ecosystem Extremophiles Food chain Interdependence Producers Population Quadrat Transect	Prior knowledge checks Bell work- retrieval quizzes/retrieval roulette Exam question plenaries (low stakes application) End of topic assessment	https://continuityoak.org.uk/lessons Click 'KS4 Science' Under Biology Click 'Ecology'

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Science	Year 9 – Half Term 5			
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
GCSE Chemistry – C9 - Atmosphere	The Earth's Atmosphere	Acid rain Carbon footprint	Prior knowledge checks Bell work- retrieval quizzes/retrieval roulette Exam question plenaries (low stakes application) End of topic assessment	https://continuityoak.org.uk/lessons Click 'KS4 Science' Under Chemistry Click 'Chemistry of the atmosphere'
	The Greenhouse Effect	Fossil Fuels Climate Change Greenhouse Gases		
	Climate Change	Particulates		
	Pollutants	Pollutants		
9BP – Plant and Photosynthesis (Review)	Plant roots	Photosynthesis	(Revision)	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 6 – Plants and Photosynthesis' - In the Year 8 topics
	Photosynthesis	Glucose Starch		
	Uses of glucose	Chloroplast Chlorophyll Stomata		
	Rate of photosynthesis DNA and inheritance	Guard Cells Xylem Phloem Pollination Root hair cell		
9PM – Matter (Review)	Particle model	Pressure	Bell work- retrieval quizzes KPI formative assessment checks throughout the topic Fact recall (including skills questions) quizzes every week set as a home learning task	https://continuityoak.org.uk/lessons Click 'KS3 Science' Click 'Unit 7 – Matter' - In the Year 8 Topics
	Density	Pascal (Pa) Upthrust		
	Diffusion and Brownian motion	Sublimation Brownian Motion		
	Pressure in a liquid	Density		
	Upthrust	Chemical changes Physical changes		
	Atmospheric pressure	Fluid Atmospheric Pressure		

Medium Term Planning Document: Science Year 9

Science	Year 9 – Half Term 6			
Topic	Content	Key Words	Formative Assessments?	Link(s) to an example lesson
GCSE Biology – B1 Cells	Animal and Plant cells	Organelle	Prior knowledge checks Bell work- retrieval quizzes/retrieval roulette Exam question plenaries (low stakes application) End of topic assessment	https://continuityoak.org.uk/lessons Click 'KS4 Science' Under Biology Click 'Cells'
	Microscopy	Nucleus		
	Specialised cells	Cell membrane		
	Stem cells	Cellulose Ribosome Mitochondria Vacuole Chloroplast Cell Wall Cytoplasm Magnification Resolution Objective lens Differentiation		

Summative Assessment:

Pupils will complete two Synoptic papers (Paper 1 within the 2nd half term, and Paper 2 within the 4th half term). Pupils will also complete three End-of-Year assessments – broken down by each Science. These assessments will inform Rank Order and will therefore inform group moves once this data is published to students and parents.

Extra Support	SEND Adaptations
We primarily address the needs of our students by continually improving our teaching and ensuring high quality lessons. To ensure all students, regardless of SEND needs or ability can access the content, we also embed the following measures in our lessons -->	<ul style="list-style-type: none"> • Instructions kept short and clear • Use of a 'slow practical' approach • Use of visual practical sheets • Planning lessons with a common predictable structure (Do now, I, We You, etc) • Use clear timings for task completion where appropriate

Medium Term Planning Document: Science Year 9

- Using scaffolds for calculations (VESRAU)
- Lots of key term repetition to aid with retention
- Model answers/scaffolding for written work
- Coloured resources for students with visual stress