CoDA Curriculum

SCIENCE

CITY OF DERBY ACADEMY

Improving the life chances of all students

Students in Year 10 and 11 study the following specification(s): **AQA Level 1/Level 2 GCSE (9-1) in Combined Science: Trilogy (worth 2 GCSEs)**

Why study SCIENCE?

A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

SCIENCE Curriculum INTENT Y7-9 (based upon the National Curriculum, 2013)

The Science Curriculum aims to ensure that all students:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

WORKING SCIENTIFICALLY	BIOLOGY	CHEMISTRY	PHYSICS

• Scientific attitudes
• Experimental skills and investigations
• Analysis and evaluation
• Measurement
	• **Structure and function of living organisms**
	  • Cells and organisation
	  • The skeletal and muscular systems
	  • Nutrition and digestion
	  • Gas exchange systems
	  • Reproduction
	  • Health
	• **Material cycles and energy**
	  • Photosynthesis
	  • Cellular respiration
	• **Interactions and interdependencies**
	  • Relationships in an ecosystem
	• **Genetics and evolution**
	  • Inheritance, chromosomes, DNA and genes
		• **The particulate nature of matter**
		• **Atoms, elements and compounds**
		• **Chemical reactions**
		• **Energetics**
		• **The Periodic Table**
		• **Materials**
		• **Earth and atmosphere**
			• **Energy**
			  • Calculation of fuel uses and costs in the domestic context
			  • Energy changes and transfers; changes in systems
			• **Motion and forces**
			  • Describing motion
			  • Forces
			  • Pressure in fluids
			  • Balanced forces; forces and motion
			• **Waves**
			  • Observed waves
			  • Sound waves; light waves; energy and waves
			• **Electricity and electromagnetism**
			  • Current electricity; static electricity; magnetism
			• **Matter**
			  • Physical changes; particle model; energy in matter
			• **Space physics**

SCIENCE Curriculum INTENT Y10-11 (AQA GCSE Combined Science – “Trilogy”)

Students will be taught to…
• develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics • develop understanding of the nature, processes and methods of science, through different types of scientific enquiries that help them to answer scientific questions about the world around them • develop and learn to apply observational, practical, modelling, enquiry and problem-solving skills, both in the laboratory, in the field and in other learning environments • develop their ability to evaluate claims based on science through critical analysis of the methodology, evidence and conclusions, both qualitatively and quantitatively

Students will be taught and assessed on their ability to…	
AO1	Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures.
AO2	Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures.
AO3	Analyse information and ideas to: interpret and evaluate; make judgments and draw conclusions; develop and improve experimental procedures.

	Autumn	Spring	Summer
Y11	Nerves and hormones (biology) Inheritance (biology) Rates of reaction (chemistry) Electricity (physics) Forces (physics)	Evolution (biology Ecology (biology) Organic chemistry (chemistry) Atmosphere (chemistry) Magnets (physics)	Analysis and resources (chemistry) Waves (physics)
Y10	Cells (biology) Human organ systems (biology) Particles (physics) Forces (physics) Atomic structure (chemistry)	Disease (biology) Plants (biology) Reactions (chemistry) Ionic bonding and electrolysis (chemistry)	Covalent and metallic bonding (chemistry) Energy (physics) Radiation (physics)
Y9	Cells Reactions Particles	Humans Atomic structure Energy	Ecology Electricity Resources
Y8	Food and digestion Forces Elements Reactions	Plants Waves Variation	Heating and cooling Earth's resources Breathing and drugs
Y7	Science skills Particles Forces Cells	Acids and alkalis Electricity Reproduction	Energy Ecology The Earth

Please refer to "Fact Sheets" for each topic for more detail.

Please note, topics may go over a term. Topics will be taught in different orders to different groups – please contact Mrs Williams at ewilliams@cityofderbyacademy.org if you would like more information