Purple - PSHE content

Yellow – key words

KS 4 Science Curriculum 2025-2026 Year 9

Curriculum Intent

The science curriculum will provide all pupils, regardless of starting point with the foundation of knowledge needed to allow them to critically analyse and engage with science, technology and nature in the modern world.

Curriculum Implementation

Year	Start When	No of lessons	Topic	Summary	Big Questions	Assessment for learning	Key Practicals
9	Autumn	10	Biomimicry		What is Biomimicry? What is Nanotechnology? How can Fluorescence be used in science? What can we learn from Termite mounds? What is special about a Lotus leaf? What can we learn from worms? How can we provide fresh water for the world's population? What can we learn from the brain in building computers? Where is the best glue in nature? What can we learn from Extremophiles?		
9	Autumn	9	Anatomy		Why do we have Skin and hair and nails?		

					Bones – Why do we need sunlight? How many different type of joints do we have? Why do we need food and what happens to it? What does the inside of a lung look like? How do Oxygen and nutrients get transported around the body? How do we feel the world around us? How does your body defend against illness? How are reproductive organs structured?		
9	Autumn	10	Animal Behaviour		What is Animal Behaviour? What is Innate behaviour? Focal and Scan sampling Understanding behaviour Mating Behaviour Predator- prey behaviour Problem Solving		

					Types of learning The training game		
END OF KEY STAGE THREE TRUST WIDE ASSESSMENT							
9	Spring	13	Atomic structure and periodic table	This topic builds on the key stage 3 topics of atoms and the periodic table	Explain the difference between Atoms, Elements, and Compounds. Identify the reactants and products. Write simple word equations Include state symbols and balance symbol equations Identify the key separation techniques and when to use each one. Identify the subatomic particles that make up an atom. Explain what the atomic number and mass number show. Describe the key discoveries that have been made to create the atomic model and who made them. Show the electronic structure of the first 20 elements on the periodic table. Explain what an ion is and how they are created	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test.	

					Describe and Explain the stages in the development of the modern periodic table Describe and predict the properties of the elements in Group 1 of the periodic table based on their electron configuration Describe and predict the properties of the elements in Group 7 of the periodic table based on their electron configuration Describe and predict the properties of the elements in Group 0 of the periodic table based on their electron configuration Describe the similarities and Differences between the properties of the Transition Metals and the Alkali Metals		
9	Spring	15	Cell biology	This builds on the KS3 topic of cells and organisation	Recognize, draw, and interpret images of cells (plant, animal and bacterial) Describe the function of major organelles Explain the difference between Eukaryotic and Prokaryotic cells Explain how the structure of some specialised cells relates to function	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test.	RP1 – microscopy RP 2 – Osmosis TRP – Culturing bacteria

					List some advantages and disadvantages of using Electron or Light microscopes Carry out calculations involving magnification, real size and image size Recognize and interpret diagrams of diffusion, osmosis, and active transport Explain how adaptations in the lungs/gills allow for effective exchange of materials State examples of factors that affect the rate of diffusion Plot, draw and interpret a graph of results Calculate percentage gain or loss using given formula Explain how plants get mineral ions from the soil		
9	Spring/Summer	16	Energy	This builds on the KS3 topic energy particles and matter	Identify Energy stores and transfers Describe conservation of energy Calculate work done Calculate gravitational potential energy	Cold calling Regular check point questions in the lessons Trust wide standardised 45min exam question test.	RP – Specific heat capacity

					Calculate Kinetic energy and Elastic Potential Energy Explain the difference between useful and wasted energy Identify the useful and wasteful energy that in appliances Describe insulators and conductors Explain what infrared radiation is using examples Calculate specific heat capacity Explain how three sources of power generate electricity Identify at least three advantages and disadvantages of wind power Explain how a wind turbine works Identify the problems associated with burning fossil fuels Compare energy resources in terms of capital and operational costs.		
9	Summer	12	Organisation	This builds on the KS3	Identify levels of organisation from smallest to largest	Cold calling	RP- effect of temperature

				topic organs and systems	Identify the organs of the digestive system and explain the function of each Describe the tests for proteins; lipids; carbohydrates and sugars Define 'enzyme' and give three examples List THREE types of blood vessel and explain the differences between them List FOUR components of blood and explain the function of each Label a diagram of the heart Describe problems that can occur with the heart and suggest ways this can be treated Label a diagram of the lungs List some lifestyle factors that can affect health Explain the difference between a benign and malignant tumour	Regular check point questions in the lessons Trust wide standardised 45min exam question test.	on enzyme activity
9	Summer	11	Bonding-structure and properties	This builds on the KS3 topic Atoms,	Explain how substances change between solids, liquids and gases	Cold calling Regular check point questions in the lessons	

				molecules and Mixtures	Explain what happens if an element gains or loses an electron Describe and explain how metals bond with non-metals Describe and explain the properties of giant ionic structures Describe and explain how non-metals bond with non-metals Describe and explain the properties of giant covalent structures Describe and explain how metals join to other metals What is nanoscience and what are its uses.	Trust wide standardised 45min exam question test.	