Grace Academy

Subject: Science	Term (Sept - Dec)

This term, we are studying…

Year	Topic(s)	Why this? Why now?
Year 7	Introduction to Science Particle Model Cells Forces Movement Electricity	Year 7s start the year learning essential practical skills before learning the fundamental concepts in Biology (Cells), Chemistry (Particles) and Physics (Forces).
Year 8	Energy Periodic Table Chemical Reactions Plants	Building on from the Y7 topics last year of Acids and Alkalis, we know explore the Periodic table, Chemical reactions and introduce Photosynthesis as a chemical reaction
Year 9	Earth's resources Forces Earth's Atmosphere Pressure Respiration	Last year we finished Science by investigating Ecosystems and understanding inheritance. Now we build on this by understanding how our use of fossil fuels impacts the Earth's ecosystems and atmosphere and how Respiration contributes to this.
Year 10	Atomic Structure Particle Model Cells Periodic Table Movement of substances Bonding Radioactivity Human Organ Systems	GCSE topics have started, with the first lessons from Paper 1 in each subject. Atomic Structure, Particle Model and Cells are all fundamental concepts in Science, as is in Year 7.
Year 11	Waves Reproduction Energy Change Electrolysis Rate Equilibrium Forces	Paper 2 GCSE content has started with Waves in Physics, Reproduction in Biology and Energy changes in Chemistry. These build on work last year around Particle models, Cells and Reactions of metals.

Year 12 Biology	Cells Biological Molecules Nucleic acids Transport Exchange Immunity DNA Mass Transport	Fundamental Biological concepts are introduced with additional depth, including Cells, Molecules and the Central Dogma of Molecular Biology. Required Practicals for Microscopy and Enzymes also take place.
Year 12 Chemistry	Atomic Structure Amount of Substance Bonding Periodicity Redox Group 2 Group 7 Energetics	The concepts introduced in atomic structure, amount of substance and bonding are fundamentals that will weave through the rest of A-level Chemistry. We then move to Inorganic Chemistry topics (Periodicity, Group 2 and Group 7) that build on GCSE learning, applying the concepts from atomic structure and bonding in different contexts. Energetics also builds on the Physical Chemistry learned at GCSE.
Year 13 Biology	Inherited Change Respiration Populations and Ecosystems Populations and Evolution Nutrient Cycles Response to Stimuli Homeostasis Gene Expression	Paper 2 content continues with Respiration, building on Photosynthesis last year, and Ecosystems, Evolution and Populations begin to explain Inherited Change in organisms and species.
Y13 Chemistry	Carboxylic Acid Derivatives Transition Metals Biological Molecules Electrochemical Cells Acid/Base Chemistry	We begin Y13 Organic Chemistry by digging into the more challenging applications of mechanisms, in the context of Carboxylic acid Derivatives (enabling practice of the fundamental skills learned in AS Organic Chemistry). Transition Metals and Biological Molecules are then introduced, giving us time to memorise the fact-heavy content of this topic. The challenging Physical Chemistry topics of Electrochemical Cells and Acids and Bases are introduced early on this year, to enable enough practice time for students to reach fluency.