Curriculum Long Term Plan: Science 2025-26

Introduction:

The Education Inspection Framework (2025) outlines its **expected standard** in grading curriculum with the following:

"the curriculum is suitable and well planned for each subject and year group. It identifies clear end points and is appropriately sequenced to build on what has already been taught and learned."
Strong Standard – "*Leaders make astute decisions about how the curriculum and teaching should adapt and evolve, based on their evidence and insight about how well pupils have learned what was intended."*

The curriculum firmly underpins the school vision from which a culture and ethos is generated that supports all students within our school. We review our curriculum policy & plans annually with a clear focus on addressing and meeting these new demands, adapting our curriculum and teaching based on pupil learning and assessment data. We are also mindful of disadvantaged pupils/pupils with SEND/IEPs, and ensure our teaching supports these pupils consistently and reduce barriers to achievement.

We are committed to ensuring that spirituality & morality permeates all sections of the curriculum and that our curriculum is broad and balanced in order that the needs of all students are provided for whatever their gifts, talents or abilities.

We aim to make provision for academic achievement and the spiritual, moral, social, cultural, mental, physical and creative development of all our students, in addition to preparing them for the opportunities, responsibilities and experiences of later life.

Purpose of Study:

-To encourage a lifelong passion for Science by engaging students in practical activities and discussions.
-To encourage a curiosity and richer awareness of the world around them.
- To give students a solid conceptual understanding of Biology, Chemistry and Physics as detailed in the National Curriculum for Key Stages 3 and 4.
- To ensure all students make progress to the best of their ability with support and challenge where needed to achieve at GCSE and provide a foundation for further study in Science at Key Stage 5 and careers in STEM.
- To experience a range of practical activities to engage and develop their scientific enquiry skills including hypothesising, making observations and accurate measurements, recording results appropriately, drawings conclusions and communicating their findings.

Aims:

At Al-Ashraf, we encourage pupils to be inquisitive throughout their time at the school and beyond. The Science curriculum fosters a healthy curiosity in pupils about our universe and promotes respect for the living and non-living. We believe science encompasses the acquisition of knowledge, concepts, skills and positive attitudes. Throughout the programmes of study, the pupils will acquire and develop the key knowledge that has been identified within each unit and across each year group, as well as the application of scientific skills. We ensure that the Working Scientifically skills are built-on and developed throughout children's time at the school so that they can apply their knowledge of science when using equipment, conducting experiments, building arguments and explaining concepts confidently and continue to ask questions and be curious about their surroundings.

Science Key Stage 3

Science at KS3 builds on skills and knowledge from Primary, filling in any gaps in knowledge to prepare for the GCSE curriculum. Students are taught safety in the Science lab and the main experimental techniques such as using a Bunsen burner or a microscope. They follow the National Curriculum for Science following units in Biology, Physics and Chemistry topics and developing the **links** between them and applying Literacy and Numeracy skills in a Science context. Students are encouraged to be curious and formulate their own hypothesis, diligently collect evidence and explain their findings and conclusions to the class. They are also given opportunities to use ICT and link their Science learning to the real world and Science careers.

The KS3 curriculum covers 9 main themes as per the National Curriculum taught through a spiral learning approach, where concepts are gradually taught and repeated over time with increasing complexity with the goal of expanding student knowledge and improving their skill level through reinforcement of concepts.

Transferable skills:

- **Thinking scientifically**. These are the skills that scientists use in a variety of contexts, such as asking questions, using equations and analysing data. Although these are used in practical activities their role is much wider than that. All lessons have such a skill identified; this skill will also be reflected in the learning activities and often feature in the objectives and outcomes.
- **Working scientifically**. These skills are strongly based on the 'Working scientifically' aspect of the Programme of Study and are selected where practical activities form part of the lesson. Although students may well be developing and using a number of these skills there is usually one in particular that is highlighted. This is designed to make it easier for teachers and students to focus upon particular aspects. Over a sequence of lessons the focus will change so that all are covered over a period of time.
- **Learner development**. Science has the power to develop a wider range of skills than those which are subject specific; it also draws upon these wider skills. In every lesson one of these is focused upon and reflected in the learning activities, providing an opportunity for the lesson to be placed in the wider context of the development of the student as a learner.

Science Key Stage 4

Science at KS4 builds on the knowledge and skills developed throughout KS3 and deepens students' understanding of scientific concepts in preparation for GCSE examinations. Students follow the AQA GCSE Combined Science: Trilogy or Triple Science pathway, studying Biology, Chemistry and Physics through topic-based units that link theory to real-world applications.The curriculum is delivered through a project-based approach designed to support the achievement of greater depth and mastery. Lessons are planned to encourage active enquiry, where students are supported to ask their own questions, design investigations, and develop their analytical thinking. They are encouraged to work scientifically by applying their research, practical and problem-solving skills to explore scientific ideas and reach evidence-based conclusions.

Scientific curiosity is nurtured and celebrated throughout KS4. Teachers use targeted questioning to assess understanding and identify misconceptions, ensuring all students are supported to progress. Frequent assessment is used to close knowledge gaps and provide opportunities for all learners to succeed. As students' confidence and independence grow, they take greater ownership of their learning and become increasingly proficient in planning investigations, handling scientific equipment, recording data, and interpreting results. This prepares them not only for success in their GCSEs but also for further study and careers in Science and STEM-related fields.

Transferable skills:

• **Thinking scientifically:** Students continue to develop higher-level reasoning skills such as critical analysis, evaluating sources of error, and interpreting complex data. These skills are integrated into both practical and theoretical lessons and help foster scientific literacy.
• **Working scientifically:** Students refine their practical skills through structured experiments, including hypothesis testing, use of controls, and variable management. There is a continued focus on methodical recording, analysis and evaluation in line with GCSE assessment objectives.
• **Learner development:** KS4 Science supports the development of independent learning, collaboration, resilience, and effective communication. Students are encouraged to link their learning to everyday life and consider the societal, ethical and environmental implications of scientific advances.

KS3 Science Long Term Curriculum Map

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
7	**Baseline Assessment** **Introduction to science & Lab safety** **Biology** Cells- Living Processes, Plants and animal cells, and uni & multicellular organisms. Microscopes **Physics** Energy stores including potential, kinetic energy, and elastic energy. Energy transfers	**Chemistry** Particle model to explain matter & properties of solids liquids and gases. Change of states Diffusion **Biology** Movement- The human skeletal and muscular system. Joints and interacting muscles	**Physics** Universe- stars and galaxy, the Earth's motion, Neighbours in the universe, Models in science **Chemistry** Separating mixtures- including, distillation & chromatography	**Biology** Interdependence- food webs, effect of toxins, importance of insects & ecological balance	**Physics** Gravity, gravitational fields, relationship between mass, weight and gravity. **Chemistry** Earth's structure. The rock cycle and processes of weathering and erosion	***Revision*** ***End of Year Exams*** ***Science Week***
	Welcome to Yr8 Science & Lab Safety **Chemistry** Periodic table arrangement & wider patterns Elements and compounds, combining elements, polymers ceramics & composites **Biology** Breathing process,	**Biology cont.** **Physics** Electricity. electrical series and parallel circuits Understand current, voltage & resistance using models.	**Biology** The digestive system & role of organs. Digestion process- disease and life style, healthy & effects of an unbalanced diet. **Chemistry** Metals and non-metals- properties, uses, reactions with acid, displacement & oxidation reactions	**Biology** Respiration- aerobic and anaerobic respiration uses in fermentation. Photosynthesis process, plant adaptations, movement of water and minerals	. **Physics** Contact forces & equilibrium. Drag, stretch and compression. Investigating Hooke's law Concept of work and simple machines to make work easier	**Chemistry** Types of reactions- combustion, thermal decomposition **Physics** Non-contact forces: Investigating magnetism, uses and strength Electromagnets- How to create and applications in the real world. Static electricity and static

8	measuring lung capacity, understanding gaseous exchange					charge ***Revision*** ***End of Year Exams*** ***Science Week***
9	**<u>Welcome to Yr9 Science & Lab Safety</u>** **<u>Biology</u>** Variation- causes & importance of variation Evolution- natural selection, importance of biodiversity, extinction **<u>Chemistry</u>** Climate- atmosphere, carbon cycle, global warming Earth resources- Extraction and recycling metals	**<u>Physics</u>** Wave properties and effects, transverse and longitudinal. Sound & Light wave properties **<u>Biology (completed in Yr8)</u>** Plant reproduction- flowering plants, fertilisation, fruits and seed dispersal methods,	**<u>Chemistry</u>** Chemical energy- exothermic and endothermic reactions applications in real life, and effects of catalysts, **<u>Physics</u>** Speed- understanding speed, distance time graphs, relative motion	**<u>Chemistry</u>** Understand chemical reactions & represent using diagrams, formulas & balanced equations **<u>Physics</u>** Energy costs in the home, using electricity responsibly, understanding renewable energy needs	**<u>Biology</u>** Human reproduction- Puberty, Male & female reproductive system, fertilisation, developing foetus, smoking in pregnancy Inheritance- genetic material, chromosomes, modelling inheritance	**<u>Physics</u>** Pressure- pressure in a solid and fluid, calculating pressure, sinking and floating ***Revision*** ***End of Year Exams*** ***Science Week***

10	**Welcome to Year 10 GCSE Science** **Physics** **P4 – Electric circuits** **Biology** **B4 – Organising animals and plants**	**Biology** **B4 – Organising animals and plants (continued)** **Physics** **P5 – Electricity in the home** **Biology** **B3 – Organisation and the digestive system**	**Chemistry** **C3 – Structure and bonding** **C4 – Chemical calculations**	***Ramadhan*** **B5 – Communicable diseases** **B6 – Preventing and treating disease** **B7 – Non-communicable diseases**	**Physics** **P1 – Conservation and the dissipation of energy** **P2 – Energy transfer by heating** **P3 – Energy resources**	**Biology** **B9 - Respiration** **B8 - Photosynthesis** **Chemistry** **C5 – Chemical changes** **C6 - Electrolysis** **C7 – Energy changes** ***Revision*** ***End of Year Exams***
11	**Welcome to Year 11 GCSE Science** **Chemistry** **C10 – Chemical analysis** **C11 – The Earth's atmosphere** **C12 – The Earth's resources** **Physics** **P8 – Forces in balance**	**Physics** **P8 – Forces in balance (continued)** **P9 - Motion** **P10 – Force and motion** **Chemistry** **C8 – Rates and equilibrium** **C9 – Crude oil and fuels** ***GCSE Mocks***	**Chemistry** **C9 – Crude oil and fuels (continued)** **Biology** **B10 – The human nervous system** **B11 – Hormonal coordination** **B12 - Reproduction**	***Ramadhan*** **Biology** **B13 – Variation and evolution** **B14 – Genetics and evolution** **B15 – Adaptations, interdependence and competition** **B16 – Organising an ecosystem** **B17 – Biodiversity and ecosystems**	**Physics** **P11 – Wave properties** **P12 – Electromagnetic waves** **P13 - Electromagnetism** ***Revision*** ***GCSE Exams***	***GCSE Exams***