SCIENCE KEY STAGE 3

Science Curriculum Intent - Science

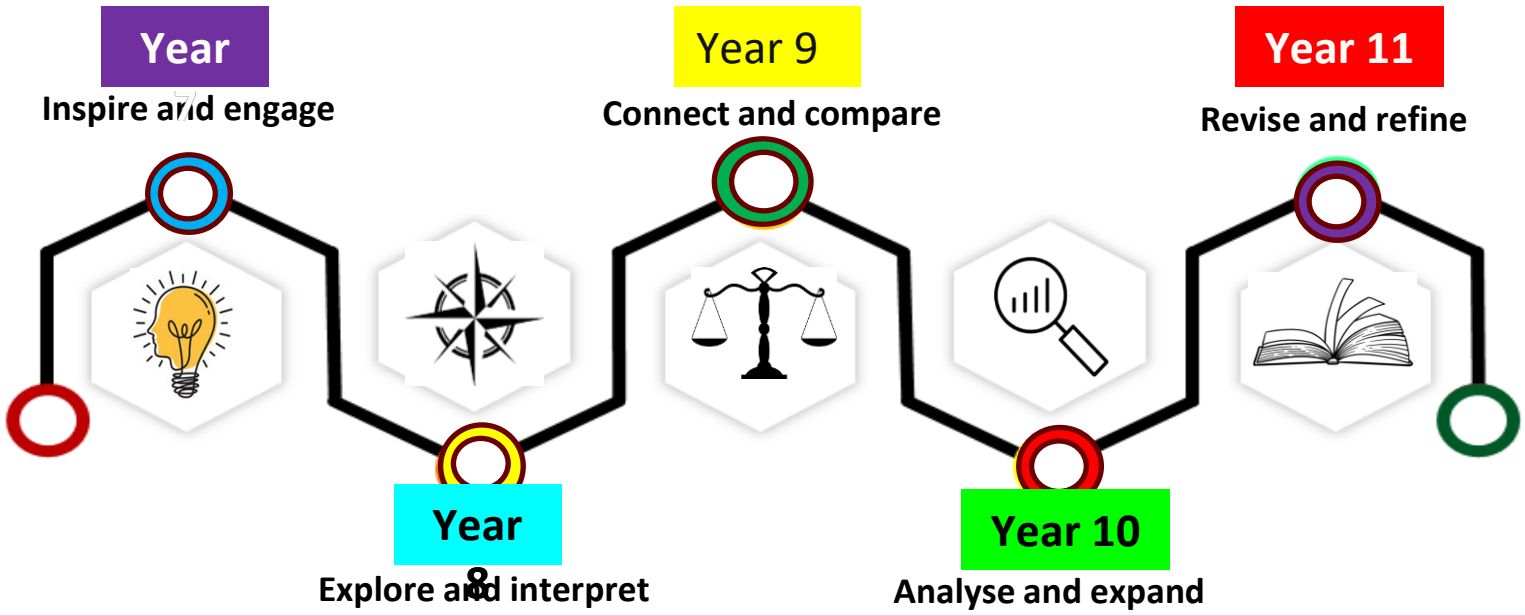
The Science curriculum in key stage 3 at WLA, through the use of Biology, Chemistry and Physics topics, aims to build the foundations of understanding how our world works. Science in year 7 is taught in line with an evidence based route to ensure that we logically build the substantive and disciplinary knowledge of pupils whilst being mindful of cognitive load. In Biology, these topics tackle the big ideas of the cellular basis of life, heredity and life cycles, organisms and their environments, variation, adaptation, evolution and health and disease. Key stage 4 then builds upon these core areas to gain further depth in the knowledge, understanding and applications of Biology across 7 topics.In Chemistry we develop the big ideas of substances and properties, particles and structure, chemical reactions, and Earth's atmosphere. Key stage 4 then builds upon these core areas to gain further depth in the knowledge, understanding and applications of Chemistry across 10 topics. In Physics we develop the big ideas of matter, forces and motion, sound, light and waves, electricity and magnetism, earth in space and energy. Key stage 4 then builds upon these core areas to gain further depth in the knowledge, understanding and applications of science.

Through the use of experimentation we look to fascinate and develop pupils' use of logical and critical thinking to deepen the knowledge rooted in the core science areas. Throughout all topics are opportunities to develop science specific skills including experiment design, data analysis and evaluation, alongside transferable skills such as use of calculations, graph plotting and extended writing. We utilise opportunities around us to engage with external agencies, where possible, to further aid pupils in understanding how their science knowledge translates to different contexts and build their science capital.

CURRICULUM LESSONS ALLOCATED OVER THE WEEKLY TIMETABLE						
Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
3	3	3				

INSPIRE	MOTIVATE	ACHIEVE
At the heart of our Science curriculum is a passion for exploring life in all its forms - from the smallest cells to the complexity of ecosystems. Our lessons are designed to engage students through real-world relevance, exciting practical investigations, and thought-provoking questions that ignite curiosity about the natural world. Teachers create dynamic, inclusive classrooms where enquiry, experimentation and discussion are central. By making connections to students' lives, current scientific developments, and global challenges, we empower learners to see the importance of Science in understanding themselves and the world around them.	A motivated learner in Science is curious, reflective, and eager to explore the living world around them. They ask thoughtful questions, seek to understand how and why things work, and make connections between biological concepts and real-life applications - from health and the environment to genetics and sustainability. They actively participate in practical work, discussions, and collaborative tasks, showing resilience when investigating challenging ideas or interpreting data. Motivated learners take ownership of their progress respond thoughtfully to feedback, and are open to refining their understanding through questioning and reflection. In a classroom that promotes enquiry, relevance, and aspiration they see themselves as scientists in the making	Success in Science is seen when learners confidently explain complex scientific concepts, analyse data with accuracy, and apply scientific thinking to solve problems. A successful scientist is curious, analytical, and methodical - able to interpret evidence, evaluate scientific information critically, and communicate findings clearly and precisely. These skills are developed through a curriculum that balances theory, practical investigations, and real-world applications from understanding cellular processes to exploring ecosystems and genetics, students practise observation, critical thinking, and problem-solving. Our curriculum embeds these skills at every stage, celebrating learners who confidently navigate scientific concepts and methods.

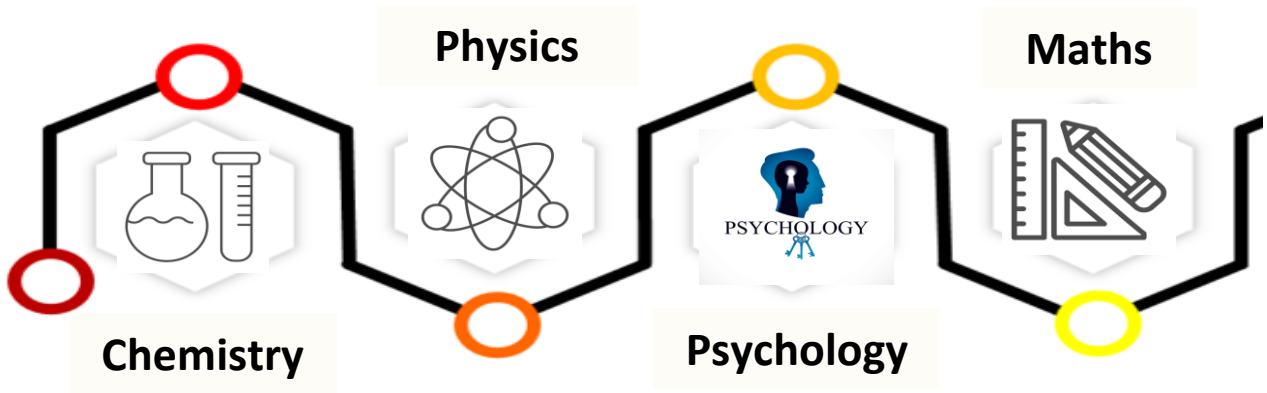
SUBJECT CURRICULUM THEMES



Cross Curricular links

- Maths - data analysis, graphs, statistical tests, and interpreting equations
- Geography - Ecosystems, climate change, population dynamics, and resource management
- History - Development of scientific ideas - vaccinations, evolution
- English - scientific writing, evaluating sources, and using literacy to communicate ideas

CONTINUING THE CURRICULUM PATH



Future Pathways

6th Form – Biology, BTEC Applied Science, college, various apprenticeships.
Careers in fields such as medicine, veterinary science, biotechnology, environmental science, agriculture, healthcare, research and teaching.

WLA Science

Curriculum theme:

Inspire and Engage

The focus in **Year 7** is to ignite a love of Science through a broad and engaging curriculum. We want to share our passion for all things Science.

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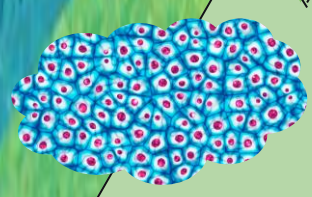
4.Variation
Students will build on their understanding of variation by exploring differences both within and between species and how this drives evolution through natural selection. They will study inheritance, chromosomes, DNA, and genes as the mechanisms by which genetic information is passed from one generation to the next.
Assessment: End of year assessment

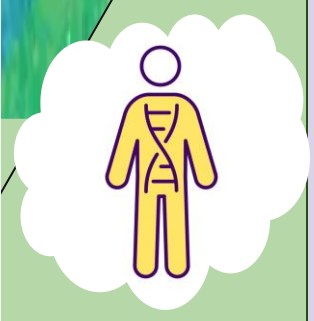
4. Heat and Temperature
In this unit, we will be learning the difference between temperature and heat. We will learn how heat moves and how do we keep an object warm or cold.
Skills assessed: Interpret data by identifying patterns and drawing conclusions. Identify independent, dependent and control variables.
Real world example: How does a vacuum flask work?
Assessment: Big write



3. Cells to Organ Systems
Students will learn about the hierarchy of biological organisation, from cells to tissues, organs, organ systems, and whole organisms.
Assessment: Big Write
Real outcome:
Understanding biological organisation, knowledge of human body systems

3. Space
In this unit, we will begin to understand the uniqueness of the Earth and how the vastness of space gives us perspective and awe.
Simple Circuits
The everyday world is largely a consequence of electrical charge. In this unit, we will explore the basics of electricity, static charge and circuits.
Assessment: Test

3. Topic Elements and Compounds
Students will identify elements and compounds and distinguish between them. They will also look at how scientists represent elements and compounds using chemical formula.
Assessment: How can I classify unknown chemicals?
Substance and Mixtures
If we put elements and compounds together we can create a mixture. We can then separate these mixtures using different separation techniques like; filtration, chromatography, distillation and evaporation. They will draw conclusions and identify control, independent and dependent variables.
Assessment: Test



2.Cells: Living, dead and never been alive
Students will explore cells as the fundamental units of life, learning to observe, interpret, and record cell structures using a light microscope.
Real Outcomes: microscopy skills, understanding cell structure and function.
Inheritance: Hereditary and the genome
Students will explore how genetic information is passed from one generation to the next, explaining similarities and differences between family members and the influence of environmental factors.
Assessment: Test

2. Materials & properties
Students will investigate the properties of the materials they interact with in everyday life from metals to ceramics.
Particles
Everything in the world is made up of particles. Students will learn how these particles can be arranged and the properties of solids, liquids and gases
Assessment: Big write

2.Forces
Forces make things change. In this unit, we learn to describe forces and their effect on the world around us.
Sound
Understanding waves helps us to communicate. In this unit, we learn to describe sound. We will learn about transverse and longitudinal waves as well as how sound moves.
Assessment: Big write

1. Introduction to Science
Pupils are introduced to our science labs by working through a set of introduction lessons to develop understanding of hazards, measuring, using a bunsen burner, graphs and scientific investigation. This allows pupils to successfully access our science curriculum and build upon their science skills from primary school.

WLA Science

Curriculum theme:

Explore and Interpret

In **Year 8**, pupils build on their foundational knowledge by exploring a wider range of scientific concepts and interpreting how they connect to the natural world. They develop analytical skills to investigate scientific systems and processes, fostering curiosity and critical thinking.

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4. Circuits
In this unit, we explore circuits. We learn about how energy is transferred within circuits, how charge flows, and how series and parallel circuits work.
Assessment: End of year test

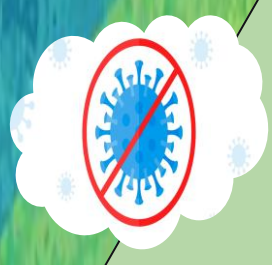
4 Human Lifestyles and Health: Diet and Exercise
Students will learn about the components of a healthy human diet, including carbohydrates, lipids, proteins, vitamins, minerals, fibre, and water, and understand the role each plays in maintaining good health. This topic promotes awareness of nutrition's impact on overall well-being.
Assessment: End of year test

3 Changes Within a Lifetime
Students will identify and describe the functions of roots, stems/trunks, leaves, and flowers in flowering plants, exploring the role of flowers in pollination, seed formation, and seed dispersal. They will also compare the life cycles of different animals, highlighting key differences in their development and reproduction.
Assessment: Big Write

3. More about Force
In this unit, we will expand on our understanding of forces from Year 7. We will introduce the concept of Weight and compare it to mass as well as explore how forces help to make objects turn or twist.

4. Floating and Sinking
Why do boats made out of concrete float when a rock on its own sinks? In this topic, we will explore aspects of gas pressure and density to explain how anything could float or sink.
Assessment: Big Write

3. Chemistry of the atmosphere
Students will learn about the current atmosphere, how it developed and then how our modern lifestyles are affecting our atmosphere and how we can minimise the impact of this.
Assessment: Test



2. What are Health and Disease
Students will learn that health encompasses both physical and mental well-being, which can vary from good to poor depending on multiple factors. They will explore how health can be affected by infectious and non-infectious diseases caused by pathogens, lifestyle choices, environmental influences, or genetic information.

Classification
Students will study variation within and between species, learning to measure and graph continuous and discontinuous traits.
Assessment: Test

2. Chemical Changes & reactions
Elements and compounds can react together to form new products. We can represent this as symbol or word equations and identify if a chemical or physical change has taken place. We will also investigate about what happens to the mass during a chemical reaction. Students will investigate and carry out some examples of chemical reactions and identify similarities and differences between these reactions.
Assessment: Big write

2. Light and Refraction
How do we see? What happens when light reflects off a different colour? Or when light goes through a coloured filter? This topic addresses both the way light moves and the misconceptions associated with how colours are created.

Assessment: Big Write

1 Variation

Students will build on their understanding of variation by exploring differences both within and between species and how this drives evolution through natural selection. They will study inheritance, chromosomes, DNA, and genes as the mechanisms by which genetic information is passed from one generation to the next.
Assessment: Big Write

Topic 1 Water Cycle and Rocks
Water is one our our most important resources that we have. We will look at how the movement of water in our oceans and air moves in a cycle. We also will investigate how we can generate energy from resources such as fossil fuels.
Writing Assessment:How do we use or conserve our natural resources

1 Heat and Temperature
In this unit, we will be learning the difference between temperature and heat. We will learn how heat moves and how do we keep an object warm or cold.

Motion
Is there an easy way to represent how we move around? In this unit, we will be calculating speed and representing this in distance- time graphs.
Assessment: Test

Year 7 recap
We will be revisiting all of the skills and knowledge developed in Year 7. Throughout all of the units in Year 8, we will be adding to the layers of prior knowledge and developing our skills and knowledge further.

WLA Science

Curriculum theme:

Connect and Compare

The **Year 9** curriculum focuses on connecting foundational concepts in science and comparing biological structures, systems, and processes across organisms. This approach emphasises developing an understanding of similarities and differences in biology, encouraging pupils to explore how different living things adapt and interact with their environments

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4 Preventing, Treating and Curing Disease
Students will examine the relationship between health and disease, exploring both communicable and non-communicable diseases in humans, animals, and plants. They will learn about pathogens such as bacteria, viruses, and fungi, alongside the body's defences and the immune system's role in combating disease. The course will also cover strategies for reducing and preventing the spread of infectious diseases, the impact of lifestyle factors on non-communicable diseases, and the processes involved in the discovery and development of new medicines.
Assessment: End of year test

4. Electric Charge Carriers
In this unit, we will be building on our understanding of circuits from Year 7 and Year 8 to explore why they work the way they do, investigating current, potential difference and resistance.
Skills assessed in this unit: Calculations and FIFA.
Real world example: Explain the complex lighting circuit inside a car.
Assessment: End of year test

3 Variation and Evolution
Students will explore the principles of inheritance, variation, and the process of natural selection that drives evolution. They will examine genetic variation within populations, evidence supporting evolution, and how developments in biology influence the classification of organisms.
Assessment: Big write, written assessment

3. Particle Model
In this unit, we learn how solids, liquids and gases are structured. We also do a full practical showing how to measure the density of regular and irregular objects as well as liquids.
Assessment: Test

3. Atomic Structure
Using our knowledge of elements and compounds we focus in on the atoms that make up everything and the model that scientists use to help explain how chemicals react. Looking at examples in Group 0, 1 and 7 alongside how this links to where they can be found on the periodic table.
Assessment: Explain what the structure of a sodium atom is like

2 Ecology
Students will investigate ecosystems by studying the levels of organisation within them and exploring the abiotic and biotic factors that affect communities. They will learn about the interdependence and adaptations of organisms, the importance of biodiversity, and how materials cycle through ecosystems, including the vital role of decomposers.
Assessment: Big write

2. Magnetism, Electromagnetism & Waves
We use magnets and electromagnets in so many areas of the world. In this unit, we will start to explore how these work.
Then pupils go on to explore the properties of waves
Assessment: Big Write

2. Chemistry of the atmosphere
Students will learn about the current atmosphere, how it developed and then how our modern lifestyles are affecting our atmosphere and how we can minimise the impact of this.
Assessment: Test

1. Biochemistry
Students will study aerobic and anaerobic respiration, understanding how living organisms break down organic molecules to release energy essential for life processes.
Reproduction: Sexual and Asexual Reproduction
Students will explore the key differences between sexual and asexual reproduction, highlighting their importance in both plants and animals. Additionally, students will examine the process of reproduction in various animals, gaining insights into the similarities and differences between plant and animal life cycles.
Assessment: Test

1. Acids and Alkalis
Most substances can be classified as an acid, alkali or neutral substance based on its pH reading. We will first investigate household substances and decide which category they fit in and then look at what happens in reactions between acids and alkalis.
Assessment: How do antacids work in the body?

1. Circuits
In this unit, we explore circuits. We learn about how energy is transferred within circuits, how charge flows, and how series and parallel circuits work.

Assessment: Big Write

Year 8 recap

We will be revisiting all of the skills and knowledge developed in Year 8. Throughout all of the units in Year 9, we will be adding to the layers of prior knowledge and developing our skills and knowledge further.