

Key Stage 3 Science Curriculum Intent

Key Stage 3 Science Department: Our KS3 Science curriculum aims to capture and extend our students' natural curiosity about scientific principles. We build upon the national curriculum by providing a bespoke scheme of work which is designed to challenge our highly-academic students and provide them with the knowledge to excel at GCSE and beyond. We also place a large focus on building the skills that all scientists need, including investigative skills; an awareness of ethics and safety; an analytical mind set and an ability to apply knowledge to unfamiliar contexts. Our ultimate goal is for students to leave KS3 Science equipped with the expertise and drive to become scientists for the future.

By the end of Key Stage 3 our students will have the following skills:

1. Know how to work safely in a laboratory
2. Be able to identify and use a range of scientific equipment correctly, including Bunsen burners
3. Be able to use microscopes effectively to visualise a range of specimens
4. Be able to "think like a scientist" when planning, undertaking and reviewing practical work
5. Construct and interpret results tables and graphs to illustrate results

By the end of Key Stage 3 Chemistry our students will:

1. Use the pH scale to distinguish between acids and alkalis and discuss their properties
2. Know the importance of the particle model in illustrating states of matter
3. Know the basic structure of atoms and ions and discuss some properties of sub-atomic particles
4. Be able to interpret patterns within the periodic table and use atomic number and mass number correctly
5. Know the importance of the conservation of mass principle whilst studying chemical reactions
6. Be able to describe some chemical bonds, to include ionic, covalent and metallic bonding
7. Be able to describe and carry out a range of reactions between acids and various metal compounds
8. Understand the basics of organic chemistry, with relation to alkanes in particular.

By the end of Key Stage 3 Biology our students will:

1. Know the structure and function of basic organelles in animal cells, plant cells and a range of specialised cells
2. Be familiar with the roles of the male and female human reproductive systems in enabling fertilisation
3. Be able to discuss the menstrual cycle and changes that occur during puberty scientifically
4. Know the theory of natural selection with relation to animal and plant adaptations
5. Outline the reaction of photosynthesis and know its importance to food chains and the carbon cycle
6. Describe the role of humans in maintaining biodiversity and preventing extinction through conservation
7. Understand the importance of respiration and link it to processes occurring in the respiratory and digestive systems
8. Explain the action of enzymes, in relation to digestion, using the lock and key model

By the end of Key Stage 3 Physics our students will:

1. Discuss the types of forces and their impact when balanced and unbalanced
2. Understand the nature of sound waves and explain how we hear sound
3. Explain the action of visible light waves including reflection, dispersion and coloured objects & filters
4. Be able to describe the Earth's place in the Solar System and Universe
5. Use mathematical skills to complete a range of calculations with regards to pressure, speed and moments
6. Construct basic series and parallel circuits and describe current, voltage and resistance correctly
7. Be able to describe how electricity is generated and evaluate renewable and non-renewable sources of energy
8. Summarise the forms of heat transfer to include conduction, convection and radiation.

At WHSG our curriculum intent is ambitious but always inclusive, composed of powerful knowledge and cultural capital, coherent and well-sequenced, and broad only specialising when necessary