SCIENCE DEPARTMENT CURRICULUM INTENT

At Wolstanton High School we are committed to providing a stimulating, engaging and intellectually challenging learning environment to enable all our students to develop scientific consciousness, from the subatomic to the intergalactic. We aim to give all children a strong understanding of the world around them whilst acquiring specific skills and knowledge to help them to think scientifically, to gain an understanding of scientific processes and an understanding of the uses and implications of Science, today and for the future.

At WHS, scientific enquiry skills are embedded in each topic the pupils study and these topics are revisited and developed throughout their time at school. This model allows children to build upon their prior knowledge and increases their enthusiasm for the topics whilst embedding this procedural knowledge into the long-term memory. All children are supported to develop and use a range of skills including observations, planning and investigations, as well as being encouraged to become independent learners in exploring possible answers for their scientific based questions.

Skills

We place our main emphasis on developing our pupil's practical skills at KS3 by following a practical-rich curriculum which introduces skills and builds them up until pupils are confident and able Scientists. Skills introduced at KS3 are embedded at KS4 as follows:

	KS3 (Y7-Y8)	KS4 (Y9-Y11)
Variables	• Correctly identify all key variables • State which variables to control in an experiment	• Use the correct terms for key variables • Explain how the results will be affected if the variables are not controlled
Equipment	• List all key pieces of equipment using correct names	• Describe how to use all key pieces of equipment correctly
Validity and experimental design	• Repeat an experiment three times • Identify anomalous results • Suggest improvements to methods to make the evidence more reliable	• Explain why three repeats are conducted in an experiment • Understand when to omit anomalies from a mean calculation or graph • Explain clearly why the data collection method is best for giving reproducible and precise results
Hazards	• Identify hazards in an experiment	• Describe clear measures taken to reduce the risk
Conclusions	• Make conclusions consistent with the evidence available	• Justify conclusions consistent with the evidence available • Draw conclusions from unseen data and unfamiliar contexts

Knowledge and understanding

Our KS3 curriculum is designed to engage and enthuse our learners whilst building up those important Scientific skills. Some topics covered at KS3 build on knowledge learnt in Primary school, whilst others are new. All of our KS3 topics are designed to introduce pupils to STEM careers and build into the GCSE topics at KS4. Specialist vocabulary for all topics is taught and built throughout the units, and effective questioning to communicate ideas is developed.

	KS3 (Y7-Y8)	**KS4 (Y9-Y11)**
Biology	• The cellular basis of life • Heredity and life cycles • Organisms and their environment • Variation, adaptation and evolution • Health and disease	• Cells and organisation • Disease and bioenergetics • Biological responses • Genetics and reproduction • Ecology
Chemistry	• Substances and properties • Particles and structure • Chemical reactions • Energy changes	• Atoms, bonding and moles • Chemical reactions and energy changes • Rates, equilibrium and organic chemistry • Analysis and the Earth's resources
Physics	• Forces and motion • Matter • Sound, light and waves • Electricity and magnetism • Earth in Space	• Energy and energy resources • Particles at work • Forces in action • Waves and electromagnetism

Assessment

Pupils at KS3 are assessed termly on both knowledge and practical skills. Assessments are lagged and prior learning is revisited throughout the year.

At KS4, pupils will complete end of topic tests and cumulative assessments throughout the year. At the end of KS4, the course is assessed terminally by AQA and pupils are awarded GCSE Combined Science (Trilogy) worth 2 GCSEs, or GCSE Biology, Chemistry and Physics (Triple award) worth 3 GCSEs.

Extended independent learning

Students have access to Seneca Learning and are encouraged to use this for a minimum of one hour every week to consolidate learning in class. At times, pupils will be expected to read ahead to new topics that are coming up to familiarise themselves with new terminology and ideas. Other independent learning tasks will be issued as appropriate to further develop work taught in class.