

Subject: Science

Subject Leader: Mrs L Brammer- Head of Biology, Science Co-ordinator
Mr A Mountford- Head of Physics
Mr W Hardcastle- Head of Chemistry

Subject teachers: Ms C Woodhouse
Mr S Williams
Mr L Berrisford
Mr J Kyme - Teachfirst
Mr I Miller- physics/maths
Mr T Shaw- chemistry/maths
Mr C Maloney - associate teacher
Mrs S Woodward
Mrs L Kidwell - Science technician

Department aims:

Birches Head Academy Science Department philosophy is based on high expectations and standards, and the desire to assist all students to achieve their full potential. The Science Department have created an environment that encourages and rewards good behaviour and all achievement; where students feel valued and secure, are inspired and motivated at all ages, abilities and levels. We aim to provide lifelong skills and confident individuals who can exist alongside our ever evolving world.

Pupils

Through their lessons in Science pupils will:

- become actively involved in their own learning
- enjoy learning about Science and will find interest, challenge and fulfilment
- achieve the highest level of success
- develop an increased awareness of the relevance and significance of Science in today's world and of its social, economic and environmental applications and implications
- be encouraged to become scientifically literate members of society by improving their knowledge and understanding of Science
- become equipped for adult life by developing scientific skills such as curiosity, objectivity and perseverance, and by exposure to scientific processes such as observing, criticising and evaluating information

Staff

- promote the systematic development of scientific knowledge and understanding
- stimulate interest and enthusiasm in scientific activity. This will enable students to play a full part in their world, now and in the future
- develop appropriate scientific skills which are of immediate use in the context of learning and which may be transferable to other situations
- encourage an awareness of the scope, limitations and costs of scientific activity
- meet statutory requirements relating to science education

Clubs/ afterschool activities

- Students in KS3 are offered the opportunity to take part in STEM competitions, staff are currently working with Siemens to promote The Roller Coaster Challenge.
- Students in year 10 and 11 are offered the opportunity to work at Stoke on Trent 6th Form college for after school science activities.

Year 7: Students are taught the separate sciences in a linear format to match the structure of delivery at KS4. Therefore each class has a teacher for biology, chemistry and physics.

Biology: Cells- the building blocks of life covering how cells work; how plants reproduce and reproduction in humans. Eating, Drinking and Breathing covering a healthy diet; the digestive system and the breathing system.

Chemistry: Using laboratory equipment safely. Distillation, solubility and separation techniques
Elements and atoms; The periodic table; Using models to represent chemicals and reactions.

Physics: Forces: Types of force; things that forces do; Useful and unwanted friction and levers and turning forces. Energy: Useful and useless energy transfers; transferring more energy; energy carried by sound.

Year 8:

Biology: The Skeleton; Muscles; Aerobic respiration and aerobic respiration.
Healthy plants; Producers, Relationships in the environment.

Chemistry: Using particle models to explain states of matter; Using the particle model to explain properties.
Acids, alkalis and indicators; Reactions of acids and alkalis and Combustion.

Year 9: All year 9 students will be following a transition course in the Autumn term. The scheme of work has been based upon transition content provided by Edexcel. This course has been designed specifically to cover KS3 content from the National Curriculum's programme of study and prepare this cohort of students for the national changes taking place at GCSE. In the Spring and Summer terms the pupils in year 9 will begin to study for the new 1-9 graded GCSE.

Biology: Variation and classification; Survival of the fittest; Inside the nucleus and Inheritance
Cigarettes and alcohol; Effects of drugs; Preventing and treating infection and Disease.

Chemistry: Metal ores; Reactivity; reaction energy and catalysts and Special materials.

Physics: Energy transfers; Energy in the home; Water waves and Light waves.

KS4 (Years 10 & 11):

Students are covering Edexcel GCSE combined Science; a two year course graded 1-9. Students will take 6 exams at the end of year 11; two for each course.

Option students can choose to study Edexcel's Triple Science which covers the three individual sciences as separate GCSE exams. This allows students a more in-depth understanding of each topic. Students will take 6 exams at the end of year 11; two extended papers for each course.

Year 10 Biology:

Students will cover a range of key concepts in Biology including Cells and Control; Genetics; Natural Selection and Genetic Modification and Health, Disease and the Development of medicines.

Year 11 Biology:

Plant Structures and the Functions; Animal Co-ordination, Control and Homeostasis; Exchange and Transport in Animals and Ecosystems and Material Cycles.

Year 10/11 Chemistry:

Students will cover States of Matter; Separating and Purifying Substances; Atomic Structure; The Periodic Table; Ionic Bonding; Types Of Substance; Acids and Alkalis; Calculations involving Masses;

Year 10 Physics:

Students will cover Forces and Motion; Conservation of Energy; Waves; Light and the Electromagnetic Spectrum and Radioactivity.

Year 11 Physics:

Energy- Forces doing work; Forces and their Effects; Electricity and Circuits; Magnetism and the Motor Effect; Electromagnetic Induction; Particle Model and Forces and Matter

How can I help support my child's learning Science?

Homework overviews are on the homework gateway.

Students are encouraged to purchase revision guides sold in school, these can be used to revise both years 10 and 11.

Exam practise books are available for KS4.

Useful websites

BBCBITESIZE revision website is recommended for all year groups for additional research and revision activities

<https://revisionscience.com/gcse-revision/physics/physics-gcse-past-papers/edexcel-physics-past-papers>

www.physicsinfo.co.uk

www.chemistryinfo.co.uk/

<http://www.biologyinfo.co.uk/>