Subject: Science

Subject Leader: Lynn Brammer- Head of Biology, Science Co-ordinator

Robert Gradwell- Head of Physics

Andrew Mountford- Head of Chemistry

Subject teachers: Sarah Bushey

Samuel Williams

Rory Bradley-Vardy

Lynn 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 and The Robotics 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 and science links.

Year 7: Students are taught the separate sciences in a linear format to match the structure of delivery at KS4.

The topics of study are:

Biology: Cells- the building blocks of life covering how cells work; how plants reproduce; reproduction and variation in humans, and Ecosystems

Chemistry: Using laboratory equipment safely

Particle models, separating mixtures, and Chemical Reactions

Physics: The Earth and Universe, Speed and Gravity, Energy costs and transfers, Electromagnets, Waves- Sound and Light,

Energy: Useful and useless energy transfers; transferring more energy; energy carried by sound.

Year 8:

Biology: Breathing and Digestion, Aerobic respiration and aerobic respiration; Genes- evolution and inheritance; Photosynthesis

Chemistry: The Earth- climate change and earth resources, Chemical energy and types of reaction, Matter- The Periodic Table and Elements

Physics: Energy- work and heating and cooling, Contact forces and pressure, Electromagnets- magnetism and circuits, Wave effects and wave properties.

Year 9:

In year 9 students will begin to study for the new 1-9 graded GCSE.

<u>The topics of study are:</u>

Biology:
Core topics in Biology- Microscopes, Cells, Enzymes and Transporting substances and Genetics.

Chemistry:
States of Matter, Atomic structure and the Periodic Table.

Physics:
Motion, Forces and Conservation of energy

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.
Top set students will follow Edexcel's Triple Science pathway 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 Genetics; Natural Selection and Genetic Modification and Health, Disease and the Development of medicines, Plant Structures and their functions.

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 Chemistry:
Students will cover Acids and Alkalis; Calculations involving Masses; Electrolytic Processes, Obtaining and Using Metals, Reversible reaction.

Year 11 Chemistry:
Students will cover Rates of Reaction, Heat energy changes, Fuels and Earth and Atmosphere Science

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 ad 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/