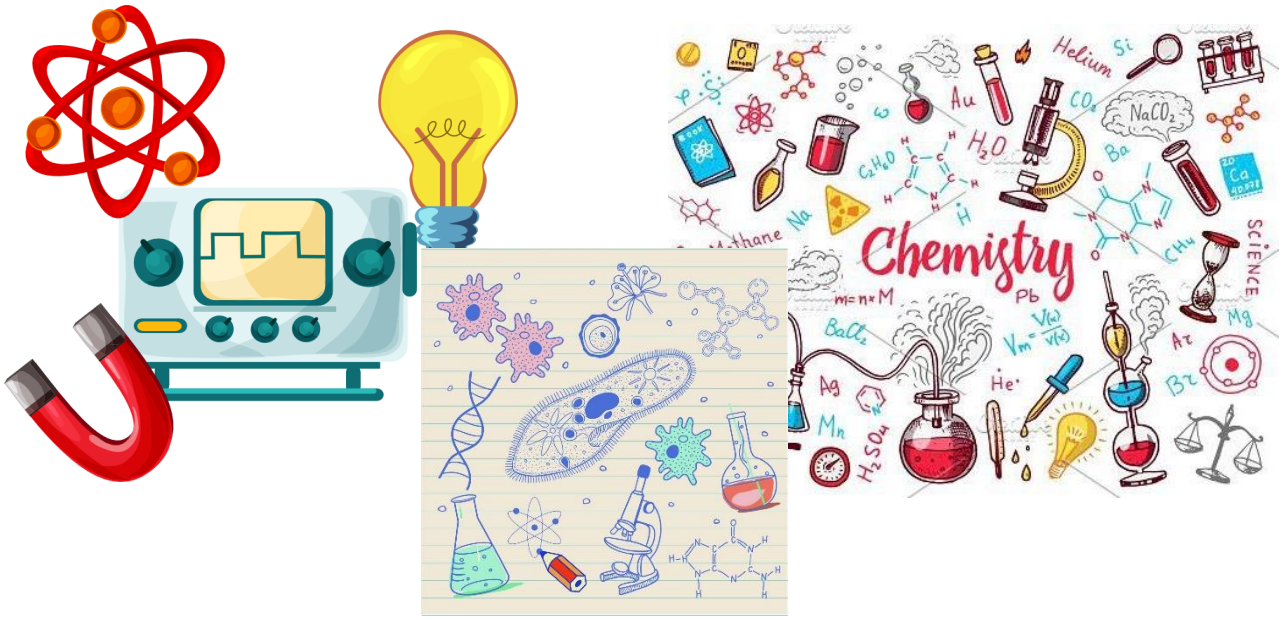
Science Curriculum Intent and Implementation



The Science Department wants to develop its pupils' curiosity and thirst to question and learn. We want our pupils to explore the living and non-living universe that we live in. We provide pupils with the opportunity to learn about themselves; the human body and the world we live in. We study topics that cover a wide range of subject matter; from protons, neutrons and electrons, to an atom, to compounds, to an organism all the way up to the universe. This range of topics allows all pupils the opportunity to get lost in a subject matter that engages and excites them.

Aim

- For all pupils to gain scientific knowledge and conceptual understanding through all three science disciplines; Biology, Chemistry and Physics.
- For pupils to gain an understanding of nature, processed and mechanism through different topics and learning activities.
- Enable pupils to understand how science fits into the world around us; how past scientific discoveries have shaped today, how science impacts our daily lives directly and how what we learn today will shape our tomorrow.
- Equip pupils with the skills to be successful during and after school.

Science KS3 and KS4 Topic overview 2020-21

Year 7

Year 7 pupils follow an accelerated path through Science, spending 2 years (year 7 & 8) completing the KS3 Scheme. At the end of each academic year pupils will complete an accumulative assessment, this is used to review grouping of pupils.

The topics covered will be;

- Biology;
    - Food and digestion
    - Cells and tissues
    - Food chains, food webs, environment and adaptation
    - Plants; reproduction and photosynthesis
    - Animal Reproduction,
- Chemistry;
    - Acids and alkalis
    - Solids, liquids and gases
    - Simple chemical reactions
    - Solutions
    - Elements compounds and mixtures
    - Investigation skills
- Physics;
    - Electricity,
    - Types of energy and Energy transfers
    - Magnets and electromagnets
    - Forces and their effects
    - Energy resources
    - Motion and speed

Year 8

Year 8 will move through the remaining KS3 topics, they are expected to finish the Scheme by the end of Year 8. (This is an accelerated KS3 course)

The topics covered will be;

- Biology;
    - Health and disease
    - Human body; including skeleton and muscles
    - Human body; including respiration, lung structure and gas exchange
    - Inheritance and variation
    - Evolution

- Chemistry;
    - Periodic table
    - Reactivity
    - Reactions of acids
    - Earth and its atmosphere
    - Investigation skills
- Physics;
    - Light
    - Sound
    - Exploring space
    - Heat transfer
    - Pressure, floating and moments

Assessments at KS3

During the different topics pupils will be given a mix of skills and knowledge based assessments; these include research activities and exam style questions. After completing the assessments, pupils will be given the opportunity to improve their work. At the end of each term students will be given a synoptic test covering the topics from that term.

Year 9

Year 9 will be starting the 2016 AQA GCSE Specification with the aim of completing the Biology GCSE during year 10. During year 9, pupils will complete the following units;

Biology;

- B1-Cell biology
- B2-Organisation
- B3- Infection and response
- B4- Bioenergetics
- B7- Ecology

Chemistry;

- C4- Chemical changes,
- C8-Chemical analysis,
- C9- Chemistry of the atmosphere,

Physics;

- P2-Electricity
- P7- Magnetism and Electromagnetism

Year 10

Year 10 will continue to progress through the AQA Biology GCSE Specification. Having already covered units B1, B2, B3, B4, and B7 in year 9, the start of the year will focus on the remaining biology topics (remainder of B7, B5 and B6) to ensure all content is covered in preparation for the mock exams in January.

After the Mock Exams the teaching time will be divided between Biology revision and continuing the Chemistry and Physics curriculum in preparation for the exams in year 11. These topics will include; C10, C3, C9, C7, P1 and P8.

Year 11

Year 11 will complete the following chemistry and physics topics; Chemistry; C1, C2, C5, C6 and Physics; P4, P6; along with Chemistry and Physics revision.

Assessment at KS4

During topic pupils will be given a mix of skilled and understanding test assessments; these include research activities and exam style questions. At the End of each topics pupils will be expected to revise the topic thoroughly and complete an exam. Formal assessments; Pupils will sit 6 Formal exams in total; biology paper 1 and 2 in year 10 and Chemistry and Physics papers 1 and 2 in year 11.

Additional resources available

- Pupils will be able to purchase revision guides through to supplement their learning.
- Pupils will be given ample exam questions to ensure they are able to apply their knowledge and understanding.
- Pupils will be invited to attend revision sessions after school, to help consolidate learning.
- Pupils will be directed to additional online resources that can add to their learning.
- A list of topics and content can be found in the revision guide and on the AQA Website; https://www.aqa.org.uk/subjects/science/gcse The ordering and teaching of topic is subject to change- all topics will be covered in the allocated time frame.

Extra-Curricular Activities

Extra-curricular activities are vital to help show the big picture and how science is applied in everyday life. Where possible we relate our teaching to the wider-world and other subjects but sometimes, seeing is believing. In recent year we have taken students to the follow places to support the learning; Cadburys world, Bourneville, Chester Zoo, Science Museum, Manchester and weekly visits to Moreton Hall for Science lessons in their state of the art Labs.