

Triple Science

Head of Department

Mr O Aribigbola

Science feeds a natural love for learning. The basis of science is thought and experimentation, and by learning to follow the process of scientific method students develop a capacity to think logically. Science opens doors to many other subjects. For example, you can't pursue science for very long without becoming fluent in maths and English. Students study historical developments such as the atomic model which links with history and use information technology to help collect and analyse data to make sense of the world around us. Science prepares students for the future. It teaches them about the basics of life and how we live, for example, how our food is produced, how to stay healthy and how we evolved. It forces students to critically evaluate popular beliefs much of which are inaccurate. It allows them to consider our values, for example in the use of stem cells, and helps us to come to terms with global warming and how we as individuals have a role to play in reducing our carbon footprint. Science helps students to get a good well-paid job. Science is a highly valued subject that nurtures the development of transferable skills that are essential for the workplace.

The triple science course is particularly suitable for those students wishing to take science beyond GCSE or for students that simply enjoy science and are good at it. It is offered only at Higher level and therefore selected students from the higher science sets are invited to join the course. It is taught as three separate science courses: Biology, Chemistry and Physics. At the end of Year 11 students will receive three separate science GCSEs.

GCSE Biology, GCSE Chemistry & GCSE Physics

Awarding Body: AQA

Possible Grades: 9-1

Course outline:

In addition to the content covered in the Trilogy Science course, students will study:

Biology topics:

Culturing microorganisms; Monoclonal antibodies; Plant disease; The brain; The eye; Control of body temperature; Maintaining water and nitrogen balance in the body; Plant hormones; Advantages and disadvantages of sexual and asexual reproduction; DNA structure; Cloning; Theory of evolution; Speciation; The understanding of genetics; Decomposition; Impact of environmental change; Trophic levels in an ecosystem; Food production

Chemistry topics:

Properties of transition metals; Bulk and surface properties of matter including nanoparticles; Yield and atom economy of chemical reactions; Use of moles in relation to concentration of solutions and volumes of gases; Titrations; Chemical cells and fuel cells; Reactions of alkenes and alcohols; Synthetic and naturally occurring polymers; Identification of ions by chemical and spectroscopic means; Corrosion and its prevention; Alloys as useful materials; Ceramics, polymers and composites; The Haber process and the use of NPK fertilisers

Physics topics:

Static electricity; Pressure in gases; Hazards and uses of radioactive emissions and of background radiation; Nuclear fission and fusion; Moments, levers and gears; Pressure and pressure differences in fluids; Changes in momentum; Reflection of waves; Sound waves; Waves for detection and

exploration; Lenses; Visible light; Black body radiation; Induced potential, transformers and the National Grid; Space physics; Red-shift

Assessment:

Written Assessment: 100%

Students will sit two equally-weighted papers, each lasting 1 hour 45 minutes, for each of the three science disciplines. These papers will all be sat at the end of year 11.

There is no course work for these courses. Students will carry out eight practicals in each of the three disciplines throughout the three years and any of these can be assessed on the appropriate written papers.

Specification link:

<https://www.aqa.org.uk/subjects/science/gcse>.



Studying science beyond GCSE provides a solid foundation for many science-related and unrelated careers such as: doctor, vet, physiotherapist, chemist, architect, surveyor, engineer, farmer, sports trainer, lawyer, journalist, computer games developer, marine biologist and electrician, to name but a few.