



SCIENCE

INTENT STATEMENT

Gunnersbury's Catholic School Mission Statement

"Gunnersbury Catholic School strives to educate all its pupils within an environment where the Catholic traditions of learning, truth, justice, respect and community are promoted."

'Ad Altiora' - 'To Higher Things.'

- Every Catholic school has a mission statement that encapsulates its distinctive job or core purpose.
- The mission statement **puts faith at the heart of all we do at school** and incorporates our school motto.
- It speaks of inclusivity and respect, that we understand as important Gospel values.
- It reminds us that Christ is at that centre of all that we do and by extension, as his creations we are all obligated to treat every member of our community with respect and love.
- It speaks of our aspirations for all in our community and our will to do all we can to make these a reality

INTENT

At Gunnersbury Catholic School the intention of the science department is to impart a joy of science and of learning about the world around us.

We strive to inspire students to continue science education at 6th form and beyond. The sciences are an exceptionally popular and highly successful set of subjects at Gunnersbury. So many of our students are inspired to go forward and seek employment within the STEM industries.

IMPLEMENTATION

Lessons are sequenced to develop a stronger understanding of science and to make links throughout the 3 disciplines as they journey through their 5 (and possibly 7) years of science education.

At Gunnersbury, science is taught through theory work, practical work, role play, individual work and group work. Through our lessons we promote an enjoyment of the subject. Teachers are enthusiastic about their subject and this relays to the pupils. Pupils are taught by mainly female scientists to whom they can aspire.

IMPACT

Students will be knowledgeable about the world around them. They will know about important science facts that they will need in their futures to help keep themselves and their families safe and healthy in their lives. Many students will go on to study science at a higher level.

We are a very successful department within the school and a large number of our students progress onto studying science and science based subjects at university. Each year our past students move on to world-leading universities such as Oxford, Cambridge, Kings College London and Imperial College to study for degrees in Medicine, Biochemistry, Psychology, Physics and Engineering to name but a few.

At KS3 Biology, Chemistry and Physics are taught together by specialist teaching staff in purpose built laboratories.

In year 7 and 8, pupils have 4 periods of Science a week, in year 9, pupils have 3 periods a week, with extracurricular activity sessions on top, throughout the year, providing ample time for experiments, group work etc. Pupils are routinely assessed through topic tests and formal assessments, as well as through their practical lessons.

At KS4 Biology, Chemistry and Physics are taught separately by specialist teaching staff in purpose built laboratories.

At GCSE, pupils will either have 6 periods of science per week (combined science) or 7 periods of science per week (separate science) plus an extra period 7 lesson throughout the year. For both combined and separate science, we follow the AQA specification.

At KS5, pupils will have 6 periods of Biology, Chemistry or Physics a week, plus an extra twilight session weekly. Each discipline is taught separately by specialist teachers with the relevant degrees. The lessons cover both theory and practical work and we follow the AQA specification.

The Science department believes that extra -curricular activities are an integral part of the learning process. We offer after-school clubs as well as organising trips to places such as the science museum and the natural science museum. Where possible we also arrange lectures for the pupils to attend, both in person and virtual, as well as organise visits from outside establishments as part of their wider learning.

At KS4 the Pupils follow the AQA combined science trilogy pathway which will lead to 2 GCSE's in Science or they follow the 3 separate sciences pathway which leads to a separate GCSE in Biology, Chemistry and Physics.

Combined Science

If the combined science route is followed students study:

Biology:

Cell biology; Organisation; Infection and Response; Bioenergetics; Homeostasis and Response; Inheritance, Variation and Response; Ecology.

Chemistry:

Atomic Structure and the Periodic Table; Bonding, structure and the properties of matter; Quantitative Chemistry; Chemical changes; Energy changes; The rate and extent of chemical change; Organic chemistry; Chemical analysis; Chemistry of the atmosphere; Using Resources.

Physics:

Forces; Energy; Waves; Electricity; Magnetism and electromagnetism; Particle model of matter; Atomic Structure.

Triple Award Science

If students follow the separate sciences route they study:

Biology:

Cell biology; Organisation; Infection and Response; Bioenergetics; Homeostasis and Response; Inheritance, Variation and Response; Ecology.

Chemistry:

Atomic Structure and the Periodic Table; Bonding, structure and the properties of matter; Quantitative Chemistry; Chemical changes; Energy changes; The rate and extent of chemical change; Organic chemistry; Chemical analysis; Chemistry of the atmosphere; Using Resources.

Physics:

Forces; Energy; Waves; Electricity; Magnetism and electromagnetism; Particle model of matter; Atomic Structure; Space physics.

For KS5, the pupils follow the AQA specification for each of the Science A-levels, leading to a separate A-level in Biology, Chemistry or Physics.

Biology A-level

In the Biology A-level, pupils will study:

Biological Molecules; Cells; Organisms Exchange substances with their Environment; Genetics, Variation and Relationships between Organisms; Energy Transfer in and between organisms; Organisms Respond to Changes in their environment; Genetics Populations Evolution and Ecosystems; The control of Gene Expression

Chemistry A-level

In the Chemistry A-level, pupils will study:

Atomic structure; Amount of substance; Bonding; Energetics; Kinetics; Equilibrium; Redox; Thermodynamics; Alkanes; Halogenoalkanes; Alkenes; Alcohols; Organic Analysis; Periodicity; Group 2; Group 7; The Rate Equation; More Equilibrium; Electrochemistry; Acids and Bases; Isomerism and Aldehydes; Carboxylic acids; Aromatic Chemistry; Nitrogen Chemistry; Organic Synthesis; NMR and Chromatography; Transition elements

Physics A-level

In the Physics A-level, pupils will study:

Particles; Waves; Optics; Mechanics; Materials; Electricity; Further mechanics; Thermal; Gases; Capacitors; Gravitational fields; Electric fields; Magnetic fields; Electromagnetic induction; Radioactivity; Nuclear; Astrophysics.