Curriculum Intent for KS4 Science at Blessed Robert Sutton Catholic Voluntary Academy

	Science at Blessed Robert Sutton allows pupils to gain a coherent understanding of the links between structure and function of living organisms; understand the properties and interactions of matter in all its forms; understand forces and the impact of these on matter; explore chemical interactions; develop a understanding of the world around them. Throughout the curriculum the students will become proficient practical scientist enlightened by The Sutton Way.
	Science will teach **spiritual development** by pupils developing an appreciation of God's creation and an understanding the interactions of science and religion. Pupils will understand uses of the Earth's recourses and how these need to be preserved and recycled, strengthen their understanding of sustainable energy sources. Pupils will be equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. They will be taught to be critical about information and to evaluate strategies and behaviours that could have an impact on the environment. Pupils will at times explore the relationship between the Church and the scientific community – and potential conflicts.
	Science will teach **social excellence** throughout the curriculum by encouraging students to listen to each other's points of view and respecting those views shared. The curriculum allows students to work together effectively in practical and non-practical situations. Pupils will develop their analytical skills and learn to draw conclusions from observations made and communicate these ideas in a variety of ways.
	Science will teach **academic excellence** by developing an understanding of the academic rigours of studying Science. Pupils will develop an understand of scientific literacy and become proficient at using it. Teaching will equip pupils to critically analyse scientific theories and question observations made in practical investigations. Pupils will strengthen their understanding of practical equipment and be able to manipulate the equipment with confidence, including the use of microscopes; safe handling chemicals; carrying out chemical reactions; taking measurements of time, distance and forces in different contexts. Pupils will develop their mathematical skills through manipulation of calculations and graphically displaying information.
Enrichment Opportunities: There is a science clinic which runs weekly, which students can access to ask additional questions and to get support with their learning.	

Pupils will build on their knowledge of the KS3 curriculum by following the AQA Biology, Chemistry and Physics GCSE specifications. Students will then sit in year 11 either separate GCSE's in Biology, Chemistry and Physics. Or a double award combined paper in AQA Triology Science either at higher or foundation level. Students will cover the following content in the 3 sciences, covering many of the topics at KS3 in greater detail and depth. The course has been sequenced so that linked ideas between the separate subjects are taught together to highlight the similarities and the differences between the subjects (e.g. atomic structure for physics and chemistry is taught as one).

Biology:

Students will build on their introduction to cells by learning about the role of the different parts of the cell and learning how they differentiate to form tissues, organs and organ systems. Specifically students will be taught about the digestive, respiratory, circulatory, nervous, endocrine and immune systems. The latter links to their study of lifestyle and infectious disease; how these can be prevented and treated. Students also study about plants and photosynthesis, how these are used in agriculture to supply the food the world needs. Evaluating the impact of human population growth on biodiversity.

Students also learn about genetics and inheritance and the role of DNA and genes in evolution.

Chemistry:

Students build on their study of matter and the particle model by learning about the structure of the atom, and how these are bonded together to form compounds. They learn in detail about the development of human understanding of atomic structure and the discovery of the elements and how the Periodic table links their properties with their atom structure.

Students learn about the chemical and energy changes that occur in chemical reactions, along with how the rate and extent of these reaction impacts on the products produced and important industrial reactions. Specifically students are taught how to measure the extent of reactions using titration and about the mole. They are also taught about organic chemistry and chemical analysis. The chemistry course also considers the impacts of human's on the planet looking at climate change, evolution of the earths atmosphere and the pollution of the air and water.

Physics:

The simple ideas of energy at KS3 are considered in more depth, looking at different energy stores and transfers. This is then developed to investigate how we produce the energy that we need, and students evaluate the different methods of electricity production by renewable and non-renewable methods. This links in with the study of pollution and climate change in chemistry and biodiversity in biology. Students extend their KS3 knowledge of electricity to investigate more complex circuits and more electronic components including diodes, thermistors and LDR's. They also learn about the domestic distribution and use of electricity in our homes.

Students are taught Newtons laws of forces and motion. This section is more mathematical and students develop their abilities to use equipment to collect data, and analyse it using equations and graphs. This content is then applied to ideas of car safety. Finally the KS3 content on waves is extended to look in more depth and the behaviour and properties of waves and students are taught about the uses and dangers of different parts of the electromagnetic spectrum.

These topics complimented by the completion of required practical investigations, to develop their disciplinary and re-enforce their substantive knowledge.

Assessment:

Students will be assessed within their lessons to ensure they understand the work they are completing. This formative assessment is used to identify areas that need to be retaught to ensure a secure grasp of the curriculum. Students are assessed half termly test based on past GCSE questions. This develops their ability to interpret questions and practise answering them in a clear and concise way.

Ways to help your child succeed:

If you are visiting the larger cities round the UK then taking time to visit some of the science, natural history and technology museums is a great way extend your child's knowledge and appreciate its importance in the modern world. There are also many great documentary and natural history programs, many of these are freely available on BBC iPlayer.

Websites:

We supply all our pupils with a subscription to century.tech which has content tailored to the curriculum. There are also many high quality resources on BBC Bitesize Scoience.