SCIENCE

Intent – What do we learn and why?

The intent of teaching Science is to acquire knowledge, conceptual understanding, and skills to solve problems and make informed decisions in scientific contexts; to develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions. To equip students to live in a world where they can make informed decisions about their lives.

> *"Science is fun. Science is curiosity. We all have natural curiosity. Science is a process of investigating. It's posing questions and coming up with a method. It's delving in."*
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> **Sally Ride - Astronaut**

The curriculum is largely informed by the National Curriculum for Science. The aim of the curriculum is to provide a high-quality Science education that provides the foundations for understanding the world through the specific disciplines of Biology, Chemistry and Physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of Science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how Science can be used to explain what is occurring, predict how things will behave, and analyse causes. The key aims are to:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics;
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them;
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Implementation – How is the curriculum planned?

In Years 7 and 8, topics have been carefully chosen to allow as broad an understanding of the subject as possible while at the same time providing a sound foundation of knowledge and skills for those progressing to AQA GCSE Science following either the separate Sciences route which results in three GCSEs; one each of Biology, Chemistry and Physics, or the Combined Sciences route which leads to two GCSEs. The GCSE courses are taught over 3 years; they are carefully and logically structured to give students the time to build up their skills and understanding. The A-Level Sciences courses follow the AQA Biology syllabus and both Chemistry and Physics follow the OCR course.

Assessment – How do we assess student understanding?

In ***Years 7 and 8*** a range of formative, summative and diagnostic marking and feedback are used to assess students' level of knowledge, understanding and skill. In addition to the work in their books, students complete a range of formal assessments at the end of topics, with GCSE styles of assessment introduced at the earliest opportunity.

At ***GCSE and A Level*** students have regular assessments that are put together using real exam questions and mark schemes to give the best possible practice for the exam style assessment they will face at the end of the course.

Mock exams take place in Years 9-13, usually in the main school hall to again replicate the exam experience as closely as possible.

Home Learning

Home Learning is an important part of Science and has many functions, one of the main ones being to reinforce skills, concepts and information learned in class alongside providing practise for exam questions.

It can be used to prepare students for upcoming class topics and help them feel more confident in the material they are learning. To succeed in Science, we encourage students to work independently as well as collaboratively and tasks at home can give students the chance to explore topics that interest them. Homework helps to develop self-discipline and encourages students to take initiative and responsibility for completing a task.

Crucially for exam success homework can provide the time for the practise of exam technique. Alongside work that is specifically set by the teacher, we encourage students to seek out wider reading or activities to enrich their understanding of Science. There are many websites and Youtube channels that support Science and teachers are always happy to make recommendations.

We subscribe to Educake and all students have access to this. This is a platform for many homeworks and it has the function to provide structured revision practise for students. We also encourage the use of www.senecalearning.com as a way of carrying out revision for all Phases.

The Youtube channel 'Free Science Lessons' provides excellent, short and easy to understand video clips that help to revise the GCSE courses. The Science Faculty also subscribes to www.focuselearning.co.uk which provides very useful simulations of the GCSE required practical work. Again teachers will provide the login details.

We recommend parents investigate the available revision materials for each Phase to support home learning. The Faculty highly recommends www.cgpbooks.co.uk/secondary-books where you can find revision guides, practise questions, exam practise, help with maths skills, revision flash cards and other revision materials.

Home learning tasks will be set and monitored through Classcharts/Educake. They will be set regularly and will in general will be equivalent to around 30 minutes per week for Foundation years' classes; Pathway years will have around 2 hours per week split across Biology, Chemistry and Physics.

At Post 16 the out of lesson learning will include the Directed Study time and the expectation is that students develop an independent work ethos where they are seeking out learning opportunities throughout the week. For Post 16 the work set to complete will focus on exam practice and/or completion of coursework and will be equivalent to around 2-3 hours per week. For additional support of out of lesson learning, the Science Faculty have staff available to provide help and advice at a drop-in session on Monday afternoons after school until 4pm if there are any queries about work that students are struggling to complete at home or independently.