SCIENCE

Curriculum Vision Statement

"Science makes people reach selflessly for truth and objectivity; it teaches people to accept reality, with wonder and admiration, not to mention the deep awe and joy that the natural order of things brings to the true scientist".

Lise Meitner, Nuclear Physicist

Vision

At Northampton School for Girls (NSG) Science, our curriculum is more than just preparation for future exams. It is about enthusing our learners with an excitement for scientific inquiry. We create an experience that allows our students to generate a genuine desire to understand the big topics that only science can answer. How does our body work? What is our place in the universe? How can we protect our fragile planet? These are just some of the questions which we delve into as part of our curriculum.

An understanding of Science is integral to all of our lives and it permeates every aspect of society, from the technology in our pockets to advances in modern medicine. With the pace of scientific development accelerating at an exponential rate it is imperative that our students have a solid comprehension of scientific concepts, opportunities and the potential threats they may bring. We equip our learners with the skills to think critically, to evaluate evidence, to identify bias and to solve complex problems.

Science is making the previously impossible possible and, with the future uncertain, we have a moral obligation to equip all our students with the necessary skills to be fully literate in these new scientific horizons.

A Science background can lead to a whole array of careers, from architect to zoologist and everything in between. Any young learner interested in pursuing a career in subjects as exciting and diverse as medicine, veterinary science, aerospace engineering, marine conservation, quantum computing, pharmacology or drug discovery to name a few, will be a scientist of the future.

Implementation

We have developed highly tailored lessons differentiated for our range of abilities and have embedded a joy of science in our everyday teaching. Students are stretched and challenged through a range of teaching tools, metacognition and higher order questioning. We teach skills that help students retain knowledge and make links across the units and curriculum so they see that science is around them all the time.

Key Stage 3 Topics to be covered from September 2020

Key Stage 3

YEAR 7	YEAR 8
• Introduction to science	• Scientific skills introduction
• Cells	• Health & lifestyle
• Structure & function of body systems	• Ecosystems
• Reproduction	• Adaptation & inheritance
• Particles & their behaviour	• The Periodic table
• Elements, atoms & compounds	• Separation techniques
• Reactions	• Metals & acids
• Acids & alkalis	• The Earth
• Forces	• Electricity & magnetism
• Sound	• Energy
• Light	• Motion & pressure
• Space	• Working scientifically

GCSE Topics to be covered from September 2020

GCSE Topics (years 9-11) AQA Combined & Separate Science

BIOLOGY	CHEMISTRY	PHYSICS
• Cell biology	• Atomic structure	• Energy
• Organisation	• Bonding	• Electricity
• Bioenergetics	• Quantitative chemistry	• Particle model of matter
• Infection & response	• Chemical changes	• Atomic structure (radioactivity)
• Homeostasis & response	• Rates of reaction	• Forces
• DNA, inheritance & variation	• Organic chemistry	• Waves
• Ecology	• Chemistry of the atmosphere	• Magnetism & Electromagnetism
	• Using resources	

Assessment

All assessments are used to identify how students can improve and advance their progress, this is shared with students through our marking and feedback system.

The information generated from assessments is also used to inform planning so that common misconceptions can be addressed and students can be provided with the appropriate level of challenge.

Students at Key Stage 3 are assessed termly on both knowledge, understanding and their application of skills, through a range of 5 mini assessments and one end of year assessment covering the content of that year. The data is then used to track progress throughout the course of the year and also create flight paths that can be used to predict students' progress at the end of Key Stage 4.

In Key Stage 4, students study either AQA Trilogy combined science or AQA separate science. There are regular assessments at the end of each half term which are composed of multiple choice, short answer and extended response questions. All assessments are cumulative and are designed to prepare students for terminal assessment at the end of year 11.

Independent Learning

As Science is a subject that is in every part of our daily lives we encourage students to stay up to date with the world around them through the regular watching of the news and popular science programmes, as well as reading scientific articles and journals. Other independent learning tasks may be issued if appropriate to further their understanding.

Home Learning tasks are set every 2 weeks for Year 7 and Year 8 students online, on the Kerboodle website. The questions are based on the national curriculum and "activate materials" which our bespoke schemes of work have been tailored around. Year 9 and GCSE students are set weekly Home Learning activities which take the form of exam questions. Home Learning aims to reinforce and build on the knowledge and understanding that has been learnt in lessons, giving students the time and opportunity to research further topics and issues in greater depth.

In this section you can find a copy of every Knowledge Organiser for every topic for each year group. These are useful, providing students with a summary of the Science content that has been learnt throughout the course of the year.