

How will pupils build upon what they have learnt in Key Stage Two?

We are finding, having met with our top feeder primary schools, that the KS2 National Curriculum is not being met within Science. This is a cause for concern and therefore we have adapted our baseline test, schemes of learning and topic rota upon these findings. Based on the curricula from local primary schools the main issues lie with misunderstanding the “requirements” of the NC and the content needed to be covered. For example there seemed to be a large focus on microorganisms such as bacteria including understanding their functions and discovery. However, plant and animal cells are overlooked as they are mentioned briefly after. We found that as Chemistry is not being taught in Year 6, with a large amount of content being placed in Year 5, students are coming into KS3 not having the ability to recall that knowledge. The students here are entitled to the full NC and therefore we have addressed these by having the topics containing these ideas first on our rota with extended time to help negotiate the gaps in knowledge that may occur. With our baseline test we are able to identify individuals NC gaps and even more so, see what areas the primary schools are finding difficult to teach. We can then address this with; termly meetings, helping to develop primary schemes of learning and where possible come in to aid teaching. This baseline test is something that will be developed overtime and change with annual findings.

Why do we teach our pupils Science?

Science at Woodlands School offers our pupils the opportunity to develop a curious and critical mind towards the world around them and allows them to pursue a broad range of interesting topics which engender their interest and foster a life-long love of learning.

Through the study of Science, Woodlands pupils will:

- Appreciate the **important role of evidence** in determining facts about the world.
- Develop **inquisitive minds** which are keen to grapple with new and challenging questions.
- Improve **critical thinking skills** and be able to deduce the validity or invalidity of different processes.
- Develop a **wide-ranging and technical repertoire of scientific vocabulary**.
- Foster **creative thinking** and inventive approaches to 21st century problems and challenges.
- Engender **independence** throughout individual and group projects and experiments.
- Hone **analytical skills**, including the ability to **hypothesise** and **draw conclusions** from a study.
- Gain an **appreciation of how science has shaped the modern world**.
- Equip themselves with the **technical and practical** abilities to conduct experiments in a safe and scientific manner.
- **Embed the foundations of scientific knowledge** required to access a variety of challenging disciplines at A-Level, university level and beyond.

What is the key knowledge pupils will gain in Science at Woodlands?

KS3: at KS3, we offer a broad range of study closely aligned to the National Curriculum, including: scientific attitudes, investigation skills, analysis and measurement; structure and function of living organisms; material cycles and energy; reproduction, genetics and evolution; atoms, elements and compounds; Earth and the atmosphere energy, electricity and waves; motion and forces and matter

KS4: at KS4, we have selected the Edexcel exam board, believing it to offer the widest-ranging topics that will be of interest to our pupils, whilst also providing an accessible language style.

- Biology: key concepts in Biology, cells and control, genetics, natural selection and genetic modification, Health, disease and the development of medicines, plant structures and their functions, animal coordination, control and homeostasis, exchange and transport in animals, ecosystems and material cycles
- Chemistry: key concepts in chemistry, states of matter and mixtures, chemical changes, extracting metals and equilibria, electrolysis and dynamic equilibrium, Groups in the periodic table, rates of reaction and energy changes, fuels and Earth science
- Physics: key concepts of physics, motion and forces, conservation of energy, waves, light and the electromagnetic spectrum, radioactivity, energy - forces doing work, forces and their effects, electricity and circuits, magnetism and the motor effect, electromagnetic induction, particle model, forces and matter

How will Science at Woodlands prepare pupils for the future?

What opportunities are there to study this subject at Key Stage Five? Post-16 education providers in the local area such as Appleton School and the Southend grammar schools offer A-Levels in Physics, Chemistry and Biology. Local colleges such as USP and South Essex offer a wide range of science-related B-TEC courses, including Biomedical Science, Forensic and Analytical Science, Applied Human Biology and Sport & Exercise Science.

What will pupils study in Science at A-Level? Depending on which discipline pupils pursue, they could study a wide range of topics, from nuclear physics to thermodynamics to the control of gene expression.

How does this link with other subjects, at KS5 and beyond? Science links well with many different disciplines at university, such as Medicine, Mathematics, Geography, Environmental Studies, Psychology and many more.

What employment opportunities are available relating to this subject? Some examples of careers that the study of Science can lead to are: environmental scientist, doctor, engineer, chemist, forensic scientist, nutritionist, astronomer, pharmacist, lecturer, teacher, toxicologist, psychiatrist and many, many more...