W SIXTH FORM

WICKERSLEY PARTNERSHIP TRUST

Edition 6
January
2025

SCIENCE

Curriculum Newsletter

YEAR 13

Contact

David Frith
WPT Science
Subject Director
dfrith@wickersley.net

Curriculum Intent

The Science curriculum is inclusive and ambitious for all students, designed to engage students and strengthen the memory of what is being learnt. The curriculum is organised into 12 Big Ideas that are developed through a series of key concepts organised into teaching topics which are revisited throughout the KS3, 4 and 5 programmes of study. We aim to spark a lifelong passion for science by cultivating a sense of wonder and awe about the natural world.

Our curriculum intends to foster a spirit of curiosity and inquiry, encouraging students to ask questions and seek answer and connect science to their everyday lives, demonstrating its relevance and importance. Throughout the science curriculum we aim to equip students with essential scientific skills, including observation, data collection, analysis, and critical thinking. Students will be provided with opportunities for engaging in hands-on practical work, encouraging exploration and experimentation.

The Science curriculum also provides opportunities for students to explore the ethical and societal implications of scientific advancements. It encourages critical thinking about global challenges, such as climate change and sustainability, and helps nurture responsible attitudes towards the environment and living organisms.

Year 13 Curriculum

Science is a set of ideas about the material world. During Year 12 and 13 you will develop your understanding and knowledge of key scientific ideas as well as developing key scientific enquiry skills.

The courses cover a wide range of biology, chemistry and physics content, whilst at the same time integrating practical scientific skills, literacy and numeracy. Entwined within this content are a wide range of investigative skills that must be met via in class practical assessments.

A-Level Biology

Before the Christmas break, Year 13 have been learning about the biochemical processes involved in respiration. At the same time, they have discovered how the nervous system is involved in controlling heart rate. This allowed them to complete an investigation where they observed the beating heart of a water flea with the aid of a microscope. Currently Year 13 are starting their final module, focusing firstly on genetics and how patterns of inheritance can be predicted.

A-Level Chemistry

In Physical Chemistry, students have been studying acid reactions including real world examples of buffer solutions and how to calculate the concentrations of their components. In Organic Chemistry, students have completed the analysis topic, they've already covered GCMS and chromatography, as well as produced and presented mini projects on NMR and how to use NMR as an analytical tool. They will soon visit Sheffield Hallam University to synthesis their own sample of aspirin and practice their analytical skills.

A-Level Physics

In Year 13, students have studied capacitors, nuclear physics, gravitational, electric and magnetic fields, as well as oscillations and circular motion. They are currently learning about medical physics and thermal physics, and will go on to learn about astronomy and cosmology.

BTEC Applied Science

Both single and double Applied Science students have been completing assignments for Unit 8 - Physiology of the Human Body System. In this unit, students have been focussing on three body systems: musculoskeletal, lymphatic and digestive. Students have been exploring the anatomy of these systems, through experimentation and use of simulations. Students have also been studying the Unit 1, which is externally assessed at the end of Year 12. Students have been learning a broad range of core ideas in Science including animal and plant cells, tissues, atomic structure and bonding, chemical and physical properties of substances related to their uses, waves and their application in communications.

Assessment Points

A-level Biology, Chemistry and Physics

Students will have mock exams covering all Year 12 and taught Year 13 content at the start of March.

Students will also have in-class end of topic assessments.

BTEC Applied Science

Students have regular coursework hand in dates. Students will have a mini mock this half term in any exam units they study before sitting the external exams in the summer - Unit 3 (single), Unit 5 (double).

Immerse Yourself

A-Level Biology

- All students have access to online resources via Kerboodle and can click the title above to log on
- Biological science review magazines containing interesting articles linked to the course
- After school P5 session runs every week on Thursdays

A-Level Chemistry

- Students can use Chemguide by clicking on the title, as well as logging onto Physics and Maths tutor and their Kerboodle
- Students can also attend Wednesday Period 5 sessions
- Independent Study

A-Level Physics

- Textbooks, CGP revision guides and workbooks and provided checklists which should be thoroughly utilised throughout their study
- Students can access Physics and Maths Tutor online by clicking on the subject title
- Thursday period 5 study sessions occur weekly in C7

BTEC Applied Science

- Applied science revision guide and workbook, as well as the textbook
- Checklists provided by teachers to guide their revision

Praise and Reward

Our rewards system can be broadly split into four categories: classroom level, subject level, school level and privilege rewards. We'll focus on classroom and subject rewards here - for more information about our rewards schemes, please see our website.

CLASSROOM LEVEL REWARDS

Awarded for: working hard, taking risks and rising to a challenge, making mistakes and learning from them, helping others, and taking pride in the school community.

Rewarded by: praise postcards, positive phone calls to parents/carers, positive text messages home, and lesson based prizes.

SUBJECT LEVEL REWARDS

Reward scheme: Star of the Week, Curriculum Awards (Subject/School Way, Participation, Working with Pride, Embracing the Whole Curriculum), High Flyer, Extra Mile, Most Improved.

Rewarded by: names displayed on reward boards, certificates, social media posts.

Broadening Horizons

Our intent is that all students have a full understanding of how to develop themselves as well rounded citizens, maintain healthy relationships and understand how to keep themselves safe both online and in their day-to-day life. We want all students to know what options are open to them in the future and understand the routes they have in order to progress on their life journey.

Just some of the things our curriculum includes:

- Links with local industries and national organisations providing opportunities for students to engage with innovative external speakers, events and resources
- Opportunities for students to visit University Science Departments and experience exciting and engaging cutting edge science days to raise the aspirations and awareness of our students
- Science based activity days to engage and enthuse students in STEM subjects including the UKROC challenge
- First hand fieldwork that provides students with opportunities to develop experiences in areas of interest and work in the local and national environment

Students can also develop their science skills and knowledge further by visiting Science Museums further afield that link in with the A-Level Science topics. You might even want to consider visiting Universities across the UK that have science museums and exhibits. Click on the logos below for more information!

Sedgwick Museum of Earth Sciences - Cambridge University

The Museum holds many wonderful treasures, such as specimens discovered by the great naturalists, including Charles Darwin and Alfred Russel Wallace. The collection contains approximately two million items and thousands of these are on display.

The Sedgwick Museum of Earth Sciences

The Royal Institution Science - London

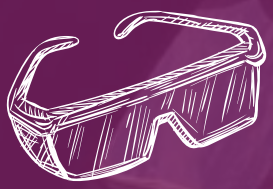
The Royal Institution aims to bring the public and scientists together to share their interest and passion for science and inspire students to see a future with science. You can click on their logo to explore the latest blogs, podcasts, videos and stories from collections. The Ri is also home to the Faraday Museum where you can explore over 200 years of history-making science.

Careers

We run a series of 'Careers in the Curriculum' weeks in our school. For Science, this week takes place in January.

Students take part in a number of activities to encourage them to think about how what they learn in the classroom can be applied in a number of future careers. At A-Level, we would expect students be thinking about which direction want their career in science to go. This could be University, an Apprenticeship or even heading straight into the science industry at an entry-level role.

Check out our 'Careers in the Curriculum' section on our website by clicking the googles...



Why study for a degree in Science?

The most popular next step for A-Level science students is to gain a degree in your chosen field. This will help you further your skills, knowledge and qualifications before entering the science industry, whilst still having the opportunity to grow and learn in a education setting.

The University of Cambridge has been voted the top in the UK for studying sciences due to it's specialised science courses as well as the lectures and labs it offers, but is renowned for its supervisions, where students discuss their work each week with a leading researcher in the field.

Watch the YouTube short by clicking on the logo below, where undergraduate students and staff talk about studying Natural Sciences at the University of Cambridge, and future career opportunities you can gain from further study.

UNIVERSITY OF CAMBRIDGE

Test Your Knowledge...

Brainscape Science quizzes are a fantastic way to memorise relevant scientific terms to help you with your studies. Click the computer to start!

The Science Way

Our subject has a 'Subject Way' at the heart of it. Our Subject Way is designed to help students become young subject specialists. The Subject Way has two main purposes:

Firstly, to teach students the vital skills they need to achieve their full potential and gain the very best grades they can. Secondly, to teach students how each subject relates to the wider world, incorporating the life skills they will learn.

The Science Way is followed in all of our lessons. It is designed to help students become young subject specialists and has two main purposes: to teach students the vital skills needed to achieve their full potential, and to demonstrate how Science relates to the wider world.

Have Your Say...

At WPT we're always looking for feedback. If you have any thoughts/opinions on this Curriculum Newsletter, its content or the curriculum in general, please scan the QR code to fill out a short feedback form.