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# SCIENCE

Curriculum Newsletter

# YEAR 12

## Contact



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# 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 12 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

Students are close to completing module 2 'Foundations in Biology', most recently studying how the cell divides in mitosis and meiosis, along with how cells specialise. They have also been completing practical work involving enzymes, investigating the factors that affect their action. In the next few weeks Year 12 will be moving on to study communicable diseases and how the body defends itself against bacteria and viruses. Alongside this on the other side of the course, they will be learning about the structure of various animal gas exchange systems.

### A-Level Chemistry

Before Christmas, students in Year 12 finished off the alkanes and alkenes sub-topic for organic chemistry and have now begun studying alcohols. They will soon be completing a required practical on the oxidation of ethanol and how reaction conditions can control the products formed. For inorganic chemistry the students are currently in the middle of studying periodicity, looking at how physical properties and structure and bonding change across the periods.

### A-Level Physics

In Module 3, students have studied forces, motion, work, energy and power. They will go on to study materials physics and Newton's laws and how they can be used to describe our world. In Module 4, students have studied charge, current, energy, power and resistance and are currently applying their knowledge to electrical circuits. They will go on to study waves and quantum physics and learn about Schrodinger's cat. BTEC Science Year 12 scientists (both double and single) have both just finished unit 2 learning aim A which looks at different ways to find concentrations in solutions. They are now moving on to learning aim B, which looks at analysing energy changes during cooling and freezing of different substances.

# Assessment Points

## A-level Biology, Chemistry and Physics

Students have sat mock assessments in the first week back for content studied so far. Students will sit full Year 12 mocks at the beginning of May - the results of these mocks will form the basis of UCAS reference grades. 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 (Unit 1 and Unit 3) before sitting the external exams in the summer.

# 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

## A-Level Physics

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

## 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.



## Museum of Zoology - 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.



## Lapworth Museum of Geology - Birmingham University

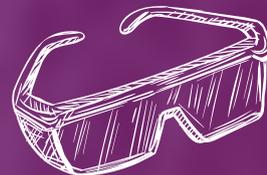
From rocks and fossils to volcanoes, earthquakes, and even dinosaurs, the Lapworth Museum captures the imagination of all visitors as they explore life over the past 3.5 billion years.

# 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 goggles...

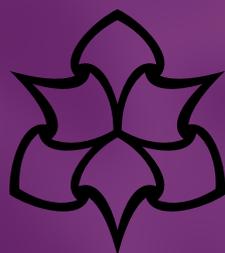


## Thinking about a Apprenticeship in Science?

There are so many options out there now for gaining the skills and qualifications you need to further your career in science. An apprenticeship gives you hands-on experience, a salary, and the opportunity to gain qualifications while you work - even a degree.

Science Council members, such as the [Royal Society of Chemistry](#) and the [Institute of Physics](#), offer a wealth of information on apprenticeships and technical education if this is a path you're considering taking.

You can also watch the youtube short from the Manchester Metropolitan University on a Laboratory Scientist Degree Apprentice at UCB, a global biopharma company, by clicking on their logo below.



**Manchester  
Metropolitan  
University**

## Test Your Knowledge...

Quizlet's A-Level Science revision flashcards are a fantastic way to memorise relevant scientific terms to help you with your studies. Click on your subject below to start...

Biology

Chemistry

Physics

BTEC Applied Science

# 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.

**THE SCIENCE WAY**

**THE SCIENCE WAY**  
**THE SUBJECT WAYS**

**WE MAKE LINKS BETWEEN BIG IDEAS IN SCIENCE**

We can make observations **describe what we see** &

**We work safely & look out for hazards**

We can learn from successes & failures **and adapt to do things better**

**We can explain everyday things in a scientific way**

We can work practically **with people with different skills & knowledge**

**WE EVALUATE EXPERIMENTAL RESULTS IN LIGHT OF THE ORIGINAL PROBLEM**

**We use scientific vocabulary accurately & talk like a scientist**

We can use numbers and data to support our work and obtain meaningful **information**

We can identify key issues in a problem and use our scientific knowledge to tackle them

**WE ALWAYS ASK QUESTIONS AND TRY TO FIGURE OUT WHY**

 WICKERSLEY PARTNERSHIP TRUST

**SUBJECT WAYS**

## 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.