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# SCIENCE

Curriculum Newsletter

## YEAR 11

### 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 answers 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 11 Curriculum

Science is a set of ideas about the material world. Year 11 will transform you into a chemical alchemist, a biological code cracker, and a physics powerhouse! Get ready, because we're about to crack the code of the universe, atom by atom, cell by cell, and force by force!

Click on the subjects below to access BBC Bitesize GCSE revision, quizzes and podcasts.

### GCSE Chemistry Y11

Chart your course through the key topics of organic chemistry, chemical equilibria, energy changes, and rates of reaction. We'll master the mysteries of hydrocarbons and polymers, understand the delicate dance of chemical balance, witness the drama of energy transformations, and unravel the secrets of speed in reactions. Get ready to build model organic molecules, analyse real-world data on industrial processes, and understand how these concepts weave together into the powerful magic of matter and change!

Discover how understanding Year 11 Chemistry unlocks the secrets of our world! We'll explore the science behind real-world problems like sustainable materials, green chemistry, and even the science of cooking! Become a responsible citizen scientist and understand how this knowledge empowers you to make informed choices and contribute to a better future!

### GCSE Biology Y11

In Biology you will master the mysteries of DNA and inheritance, understand the forces shaping the living world, explore the delicate balance of ecosystems, and dissect the mechanisms that keep organisms ticking. The topics covered in year 11 biology are genetics, evolution, the environment, homeostasis, and control systems. Get ready to build model chromosomes, analyse real-world data on sustainability, and understand how these concepts weave together into the tapestry of life on Earth.

Conduct DNA extraction experiments, build model ecosystems, and participate in debates on ethical dilemmas to actively engage with the material.

### GCSE Physics Y11

In Physics you will master the mysteries of circuits and fields, understand the dance of waves across light and sound, dissect the forces shaping our world, and witness the powerful transformations of energy. The key units of study include topics on electricity, waves, forces, and work & energy. Get ready to build model circuits, analyse real-world data on space exploration, and understand how these concepts weave together into the grand symphony of the universe!

We'll explore the science behind real-world problems like renewable energy sources, technological advancements, and even the mind-blowing mysteries of space exploration.

Throughout your GCSE we will see how understanding science unlocks the secrets of our world! We'll investigate the science behind medical breakthroughs, solve real-world problems with engineering principles, and explore the ethical implications of scientific discoveries. Become a responsible citizen scientist and understand how science shapes your future!

# Big Questions in Year 11 Science

- How can we understand and combat emerging diseases? From pandemics to antibiotic resistance, how can we prepare for and combat new threats to our health?
- How can we clean up pollution and remediate environmental damage? From soil contamination to plastic waste, can we develop chemical solutions to restore our planet's health?
- How can we combat climate change using physics? Understanding the physics of the climate system is crucial for developing effective mitigation and adaptation strategies.

## Assessment Points

Students are assessed at the end of each topic, roughly once per half term (per science). Assessments are online and include short answer written questions and multiple-choice questions. Students will also take two mock exams papers in November (paper 1 content only) and March (paper 1 and paper 2 content).

## Immerse Yourself

### Save My Exams



- Online Revision
- Progress Checks
- Exam Practice

### Educake Science Platform



- Interactive Homework
- Study Guides
- Independent Study

Students also have access to the online quizzing platform Educake. Every question is auto-marked, and students get instant feedback. Students can set themselves quizzes for more practice. They can see how they are doing on every topic and can identify areas to revise based on their progress.



## Test Your Knowledge...

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

# 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 Year 11 Science topics. The UKROC Challenge is also something students wishing to broaden their science horizons should look into, click on the logos below for more information!

## UKROC Challenge

The challenge is aimed at students aged 11 – 18 from any secondary schools, colleges, educational facilities or youth groups to design, build and launch a model rocket with a fragile payload.



## Eden Project - Cornwall

Budding biologists might want to add the Eden Project to their trip list. The Eden Project includes environmental education focusing on the interdependence of plants and people; plants are labelled with their medicinal uses. Explore massive covered Biomes to trek through one of the world's largest indoor rainforests and immerse yourself in the calm fragrance of the Mediterranean Biome.

# 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. In Year 11, we look at possible science career pathways including more advanced roles.

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



## Thinking about a Career in Science?

By Year 11, you may be considering taking your love for science further and making a career out of it. You will study all 3 Science subjects up to GCSE level in secondary school and have the option to study them at a higher level when you leave. If you think a career in science is for you, you will want to be considering your options after college or sixth form as well.

Tour the Biosciences and Chemistry Facilities at Sheffield Hallam University by clicking on their logo below.



## Get Interactive

BBC Bitesize is an approved revision resource that will help you break down, digest and remember GCSE Science topics.

Click on their logo to access the GCSE Combined Science quick-fire quizzes and get a head start on revising for your mock exams this year.



## Science Study Lounge

Ditch the dull and dive into the Wickersley Partnership Trust Science wormhole! Buckle up for a science safari where you'll blast off to the Galapagos, crack museum mysteries, and become a science superhero, all without leaving your seat!

- Snorkel with sea iguanas on a VR mission to the Galapagos? We're talking 360° views of volcanoes, giant tortoises chilling, and Darwin's finches chirping your way to epic discoveries!
- Crack the code at the National History Museum? Hunt for missing dino bones, decipher ancient scrolls, and solve scientific puzzles like a real-life Indiana Jones!
- Become a citizen scientist with weekly challenges? Build the greatest bridge ever, whip up erupting volcanoes in your kitchen, and win bragging rights (and maybe even prizes!) as the top science sleuth!

Keep an eye out for guest appearances from real-life scientists who'll spill the beans on their mind-blowing research and answer your burning questions. Access by clicking on the Science Study Lounge title!

# 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**

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

We can evaluate experimental results in light of the original problem

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 ARE SUBJECT SPECIALISTS AND TRY TO TACKLE ANY PROBLEM

**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.