

## Science – Curriculum Statement

Students are admitted to Endeavour Academy at various points during Key Stage 4, and therefore different students are with us for different periods of time. Many students have missed large amounts of schooling prior to admission. Consequently, our timetables need to be flexible and personalised, with all courses offering a variety of qualification routes and supporting pathways to post 16 learning.

### **Intent**

We believe that fostering an understanding of the world around us is a vital part of a young person's development and education. As the global pandemic taught us science is both fast-changing and vital to our well-being. It is important that young people develop an appreciation of the relevance of science in society and the everyday in preparation for life in an increasingly scientific and technological world. We aim to build scientific understanding for all our pupils regardless of their background or starting point to inspire them to continue to use science in their everyday life, future education and careers.

### **Core curriculum links**







<b>Maths</b>	<b>English</b>
Calculating	Vocabulary
Graph skills	Justifying
Predicting	Speaking
Problem solving	Listening
Estimating	Questioning



### **Careers in Science**

<b>Medical</b> Doctor Nurse Paramedic Pharmacist Midwife Care assistant Physiotherapy Dentist Dental Lab Assistant Doctor's receptionist	<b>Animals</b> Vet Veterinary nurse Vet receptionist Animal care assistant Farmer	<b>Education</b> School Teacher Sixth Form Teacher College Tutor University Lecturer	<b>Leisure</b> Hairdresser Personal Trainer Florist Chef YouTuber Dance instructor Food scientist Market researcher
<b>Engineering</b> Engineer Electrician Engineering apprentice Lab technician	<b>Armed Forces</b> Army Navy Airforce		

## Skills Builder

At Endeavour Academy we teach skills that are essential to any person no matter what career path they choose. Using resources and support from [The Skills Builder Partnership](#) we aim to develop students' understanding and confidence within these essential skills.

Skill	How is this developed
Listening 	Students must receive, retain, and process new methods and ideas. <ul style="list-style-type: none"> <li>- Recording of important information</li> <li>- Asking questions for clarification</li> <li>- Acting on instructions</li> <li>- Summarising verbal instructions and ideas</li> <li>- Providing opportunities for students to hear the opinions of others.</li> </ul>
Speaking 	Students can verbalise information and ideas. <ul style="list-style-type: none"> <li>- Use of correct scientific terminology.</li> <li>- Effective communication during practical activities.</li> <li>- Describing and explaining concepts to peers</li> <li>- Providing good scientific role models and recognising that effective communication is crucial within the scientific community.</li> </ul>
Problem Solving 	Students can find a solution to challenges. <ul style="list-style-type: none"> <li>- Recognising problems may have multiple solutions.</li> <li>- Recognising competence requires time and effort.</li> <li>- Developing independence in problem solving.</li> <li>- Tailoring challenges to students' individual needs.</li> <li>- Presenting abstract scenarios for students to solve using their scientific knowledge.</li> <li>- Providing tangible examples of scientific problem solving</li> </ul>
Creativity 	Students can use their imagination to generate new ideas. <ul style="list-style-type: none"> <li>- Investigation of scientific problems from multiple perspectives</li> <li>- Provide practical challenges and encourage students to be creative in their approach to solving them.</li> <li>- Creating methods to explore scientific hypotheses.</li> <li>- Exploring links between contrasting branches of science.</li> <li>- Exploring historical and contemporary examples of scientific curiosity and their impact on society.</li> <li>- Imagining how scientific discoveries impact on the 'everyday'.</li> </ul>
Staying Positive 	Students can use tactics and strategies to overcome setbacks and achieve goals. <ul style="list-style-type: none"> <li>- Recognising that making mistakes is a crucial part of the learning process.</li> <li>- Developing resilience when work is challenging.</li> <li>- Recognising that support is available to overcome difficulties.</li> <li>- Sharing examples of the challenges faced by scientists and how they were overcome.</li> </ul>
Aiming High 	Students can set clear, tangible goals and devise a robust route to achieving them. <ul style="list-style-type: none"> <li>- Extension tasks within the lesson that encourage students to broaden their scientific understanding.</li> <li>- Recognising that accuracy and precision are crucial in the scientific process.</li> <li>- Providing students with aspirational goals and real-life examples of where science may take them.</li> </ul>

	<ul style="list-style-type: none"> <li>- Providing opportunities for students to experience science outside the classroom.</li> <li>- Celebrating individual achievements and successes.</li> <li>- Encouraging students to set own targets based on previous achievements.</li> </ul>
<p>Leadership</p> 	<p>Students can support and encourage others to achieve.</p> <ul style="list-style-type: none"> <li>- Student led explanation of scientific concepts to support peer development and understanding.</li> <li>- Effective sharing of tasks during group work.</li> <li>- Supporting peers with challenges, particularly during practical tasks.</li> <li>- Providing examples of good scientific leadership.</li> <li>- Recognising that opinions may differ, and that scientific discovery naturally involves controversies and difficulties.</li> </ul>
<p>Teamwork</p> 	<p>Students can work cooperatively with others to achieve.</p> <ul style="list-style-type: none"> <li>- Encourage cooperation, responsibility and support in practical work.</li> <li>- Encourage class-based discussion and peer-support for problem solving.</li> <li>- Recognising the importance of the contributions of others during class discussions and practical work.</li> <li>- Recognising that teamwork and peer review is a crucial part of the scientific discovery process.</li> </ul>

## Implementation

Science lessons are planned to build on the prior knowledge and skills of students, regardless of point of entry. We aim to equip students with a strong foundation in key fundamental scientific concepts.

Skills are continually expanded and developed according to the needs of individual students. We adopt a creative approach to learning to enable us to challenge students' previous experiences and pre-conceived ideas of science so we can include all students in science learning.

A particular emphasis is placed on the development of practical science skills to encourage student curiosity and engagement. In addition, we incorporate learning outside the classroom wherever possible to highlight the relevance of science in the world around us.

## Science Courses

Students follow the AQA Science Curriculum. There are several pathways that students follow.

### Foundation Learning

AQA Unit Award Schemes (UASs).

UASs provide a wide range of units in science which are differentiated, making accreditation accessible to all pupils regardless of their ability. They offer learners the opportunity to have their achievements formally recognised with a certificate each time a short unit of learning is successfully completed. UASs are completed according to the needs and interests of individual students.

### Entry Level Certificate

**Single Award:** students submit 6 pieces of work; 3 externally set assignments – one from each of biology, chemistry and physics- and 3 internally set assignments one from each of biology, chemistry and physics. The externally set assignments and teacher devised assignments do not need be from the same component.

**Dual Award:** students submit 12 pieces of work (6 externally set assignments and 6 internally set assignments), 1 externally set assignment and 1 teacher devised assignment from each biology, chemistry and physics component.

#### Biology

Component 1 -Biology: The human body

Component 2- Biology: Environment, evolution and inheritance

#### Chemistry

Component 3 -Chemistry: Elements, mixtures and compounds

Component 4- Chemistry: Chemistry in our world

#### Physics

Component 5 -Physics: Energy, forces and the structure of matter

Component 6- Physics: Electricity, magnetism and waves

## **AQA GCSE Combined Science Trilogy (dual award)**

### **Biology**

1. Cell biology
2. Organisation
3. Infection and response
4. Bioenergetics
5. Homeostasis and response
6. Inheritance, variation and evolution
7. Ecology

### **Chemistry**

1. Atomic structure and the periodic table
2. Bonding, structure, and the properties of matter
3. Quantitative chemistry
4. Chemical changes
5. Energy changes
6. The rate and extent of chemical change
7. Organic chemistry
8. Chemical analysis
9. Chemistry of the atmosphere
10. Using resources

### **Physics**

1. Energy
2. Electricity
3. Particle model of matter
4. Atomic Structure
5. Forces
6. Waves
7. Magnetism and electromagnetism

## **Assessment**

On admission, all students complete a baseline assessment to allow teachers to identify starting points, track progress and apply interventions where necessary.

End of topic assessments and mock exams using past papers are part of our summative assessment procedures. Feedback and opportunities for students to discuss their learning form part of our planning and marking procedures.

In every lesson, formative assessments take place in the shape of multiple-choice quizzes, discussions and questioning. This information helps form our planning which adapts to accommodate any gaps identified.

## Impact

Baseline assessment information is used to evaluate progress from point of entry to point of leaving year 11. Our main goal is for our students to be able to clearly explain what they have learned and demonstrate these skills across the curriculum and outside of the classroom setting.

We aim for students to leave:

- With an appreciation of the relevance of science in the world around them.
- Equipped with the scientific knowledge to make informed choices about scientific issues they will encounter throughout their lives.
- Equipped with the relevant scientific skills, knowledge and qualifications to allow them to succeed on their chosen path.
- Equipped with a knowledge of the range of scientific careers available to them.

## Useful Links

Link to the AQA website for further information.

<https://www.aqa.org.uk/subjects/science>

**Extension tasks and revision programmes can be found by accessing:**

**Seneca Online Learning Platform:**

<https://senecalearning.com/en-GB/>

**BBC Bitesize Revision Pages:**

**Combined Science- Biology**

<https://www.bbc.co.uk/bitesize/topics/zthssrd>

**Combined Science- Chemistry**

<https://www.bbc.co.uk/bitesize/topics/z88jity>

**Combined Science- Physics**

<https://www.bbc.co.uk/bitesize/topics/zqw77p3>

**Cognito Videos for Maths and Science- Home Page**

<https://www.youtube.com/@Cognitoedu>

Access the Cognito Home Page for links to short videos (approximately 3 to 7 minutes each) describing and explaining each combined science topic.

## How parents can help develop science skills

You can support the work we are doing by attending parent events, keeping up to date by regularly accessing our website and enquiring about what your child is doing in school.

Parents/carers can also sign up to Seneca online with a parent/carer account to access the same learning as your child.

<https://senecalearning.com/en-GB/>

If you would like further information about how to access and create an online Seneca account please contact school.