

## Curriculum Intent

Chemistry is the study of matter, its properties, how and why substances combine or separate to form other substances, and how substances interact with energy. Chemistry is involved in everything we do, from growing food to cleaning our homes or launching a space rocket. The key stage 3 Chemistry course encourages students to develop an interest and understanding of Chemistry from tiny atoms to the composition of our planet.

The course aims for all students to:

- appreciate the role of Chemistry in helping to solve challenges of global significance
- know how to use specialist Chemistry vocabulary and conventions
- be curious, thoughtful scientists who are able to apply their knowledge to improve their understanding
- develop practical and investigative skills

## Autumn Term | Matter Two

### Students will learn:-

- What are atoms and elements?
- What are the patterns in the properties of elements?
- How can we use the periodic table to predict element properties?

### How is homework used to enhance learning?

Kerboodle <https://www.kerboodle.com/app>  
 BBC bitesize <https://www.bbc.co.uk/bitesize/subjects/zh2xsbk>  
 AES student science website  
<https://sites.google.com/view/angloscience>

#### Suggested homework tasks

- Learn spelling and definitions of key words.
- Elements on Earth research project.
- List the number of atoms in and name given compounds.
- Produce a leaflet for swimming pools, explaining to the general public the merits and risks of adding chlorine to water.
- Research the uses of Group 0 elements.

### How will we assess impact?

- Peer and self-assessment
- Previous lesson recap quiz
- Land mark tasks
- End of topic test

### Knowledge, understanding & Skills

- Elements are substances that cannot be broken down
- Elements are made up of one type of atom
- Compounds are substances made of atom of two or more elements chemically joined.
- The periodic table allows us to predict patterns
- Group 1 properties
- Group 7 properties
- Practical processes include investigating the properties of different groups on the periodic table

### What does excellence look like?

Carrying out practical processes logically, precisely and accurately. Linking ideas together to answer questions logically and sequenced.  
 Linking big ideas to answer real life Chemistry problems.

For example:

- Use particle diagrams to explain why a compound has different properties to the elements whose atoms it contains.
- Deduce a pattern in the formula of similar compounds and use it to suggest formulae for unfamiliar ones.
- Use observations of a pattern in chemical reactions to predict the behaviour of an element in Group 1.

## Spring Term | Reactions Two

### Students will learn:-

- What happens to the atoms in chemical reactions?
- How does mass change in chemical reactions?
- Why do chemical reactions transfer energy?

### Knowledge, understanding & Skills

- A physical change, changes the physical properties of a substance, but does not form a new substance.
- In a chemical reaction one or more new substances are formed.
- Word equations and balanced symbol equations
- Combustion reactions and what is a fuel
- A thermal decomposition reaction
- Exothermic and endothermic reactions
- The role of a catalyst

### What does excellence look like?

- Carrying out practical processes logically, precisely and accurately.
- Linking ideas together to
- answer questions logically and sequenced.
- Linking big ideas to answer real life Chemistry problems.
- **For example:**
  - Explain in detail what happens to the particles in chemical reactions such as those between a metal and oxygen.
  - Balance a symbol equation.
  - Use an energy level diagram to explain whether a given reaction would be more suitable for a chemical hand warmer or a cool pack.



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#### Suggested homework tasks

- Learn spelling and definitions of key words.
- Make short films or animations to show how the atoms are rearranged in a chemical reaction from the lesson.
- Complete a list of equations with one missing mass each time to practise mass calculation.
- Find out about the metals used in catalytic **converters**.

### How will we assess impact? (3D)

Peer and self-assessment  
 Previous lesson recap quiz  
 Land mark tasks  
 End of topic test

## Summer Term | Earth Two

### Students will learn:-

What causes climate change?  
 How do we obtain the materials we need?  
 How can we conserve the Earth's resources

### How is homework used to enhance learning?

Kerboodle <https://www.kerboodle.com/app>  
 BBC bitesize <https://www.bbc.co.uk/bitesize/subjects/zh2xsbk>  
 AES student science website  
<https://sites.google.com/view/angloscience>

#### Suggested homework tasks

- Learn spelling and definitions of key words.
- Write a catchy rhyme, rap, or song to describe the different routes available in the carbon cycle.
- Research how metals are extracted from their ores.

### How will we assess impact? (3D)

Peer and self-assessment  
 Previous lesson recap quiz  
 Land mark tasks  
 End of topic test

### Knowledge, understanding & Skills

- Resources from earth's crust, atmosphere or oceans.
- The atmosphere -mixture of gases.
- Carbon sinks store carbon
- The carbon cycle
- Carbon dioxide and link to global warming
- Reactivity series of metals
- Extraction of aluminium by electrolysis
- recycling of metals and materials.

### What does excellence look like?

Carrying out practical processes logically, precisely and accurately.

Linking ideas together to

answer questions logically and sequenced.

Linking big ideas to answer real life Chemistry problems.

For example:

- Design and evaluate a model to explain the greenhouse effect, and use an annotated diagram to describe the model in detail.

- Justify the choice of extraction method for a metal, given data about reactivity.

- Suggest ways in which changes in behaviour and the use of alternative materials may limit the consumption of natural resources.

## International Opportunities

### Visits Programmes

- Cruise guided visit on the River Rance
- Fontaine les Vaucluse – water mills
- La Camargue – marshes vegetation.
- Roussillon – ochre ridge.
- Senckenberg Museum – National History Museum.
- Physics lesson in school - Madrid
- Science Museums – various visits
- Lake Como – Villa Carlotta and botanical gardens in Tremezza + Villa Monastero in Varenna
- Science and tech museum, Madrid
- Arese - historical museum Alfa Romeo
- Science museum - Foucault's pendulum
- Biology - botanical gardens
- Alcázar – Granada, guided tour and Camera Obscura
- Tarifa harbour - Whale watching
- Arcos - visit to El Rancho Cortesano (Bee/Honey Museum) - workshop"

### Within the curriculum

The KS3 Chemistry curriculum is designed to introduce students to the key scientific concepts, supported through the study of international examples and theories.

Students are encouraged to engage with scientific concepts and theories beyond the syllabus by exploring key examples of international collaboration, or scientific discovery where the common language of scientific discovery is utilised.

Reference is additionally made to key scientists with connections to countries and cities visited as part of the school's international exchange programme.