

YEAR 9 and 10 SCIENCE

Chemistry

- Unit Outline -



Course Description:

In this unit students will add to their previous knowledge of chemistry with a focus on the atomic structure and properties of elements and how these determine their position on the Periodic Table. They will explore different types of chemical reactions, their products and factors that affect the rate of reaction. Towards the end of term the students will be given the opportunity to demonstrate their understanding by designing and conducting an experiment that tests a known property/product from a given chemical reaction.

Course Outcomes:

By the end of this unit you should be able to:

- Recognise that elements in the same group of the Periodic Table have similar properties.
- Explain how the electron configuration of an atom determines that element's position on the Periodic Table and some of its properties.
- Explain the chemical properties of metals.
- Describe different types of chemical reactions and their products.
- Write word and chemical equations for chemical reactions and to balance basic equations.
- Understand the effects of factors such as catalysts and temperatures on the rate of chemical equations.
- Understand that chemistry is used to make a variety of useful, everyday substances such as fuels, pharmaceuticals and materials.

Course Organisation:

The organisation of the unit will be:

- The students are presented with both theoretical and practical work to develop their knowledge and skills.

Student's activities will include:

- Developing a knowledge base using notes, questions, bookwork/worksheets.
- Conduct practical activities to explore and visualise theoretical concepts.
- Practice using terminology and language in oral and written activities.

Course Timeline:

| Wk | Activity | Assessment |
|-----|--|------------------------|
| 1-4 | Revision and Atomic structure <ul style="list-style-type: none">• Structure of an atom• Neutral atoms vs ions• Types of Chemical reactions• Electron configuration• Valency | Test at the end of Wk4 |

| | | |
|-----|---|--|
| | <ul style="list-style-type: none"> • Types of chemical bonds | |
| | <p>The Periodic Table</p> <ul style="list-style-type: none"> • History of its compilation • Groups and Rows of elements • Elements and their common properties | |
| 6-7 | <p>Standard Reactions</p> <ul style="list-style-type: none"> • General properties • Common uses | Test at the end of Wk7 |
| 7-9 | <p>Practical</p> <ul style="list-style-type: none"> • Design and conduct experiment to test a known property of a given reaction | Practical assessment of experimental design and conduction |

Course Vocabulary:

- Atom
- Nucleus
- Proton
- Neutron
- Electron
- Electron Shell
- Electron configuration
- Ion
- Valency
- Compound
- Mixture
- Solution
- Reaction
- Properties
- Element
- Periodic Table
- Metal
- Non-metal
- Ionic bond
- Metallic bond
- Covalent bond
- Chemical equation
- Word equation
- Balanced equation
- Malleable
- Ductile
- Catalyst
- Mole
- Formula mass

- Assessment Outline -

Course Assessment:

| Wk | Assessment type | Weighting | Marks achieved | Your Total |
|-------|-----------------------------|-----------|----------------|------------|
| 4 | Test | 40% | | |
| 7-8 | Practical | 40% | | |
| 1 - 9 | General class participation | 20% | | |

*specific marks to be advised

Specific Equipment required for each lesson:

- File/book to write in
- Pens, ruler, calculator