

Chemistry

This study enables students to:

- apply models, theories and concepts to describe, explain, analyse and make predictions about chemical substances, their structures and properties, and reactions between them
- understand and use the language and rules of chemistry to solve qualitative and quantitative problems

UNIT 1 How can the diversity of materials be explained?

A focus on the nature of chemical elements, atomic structure, models of the atom, the periodic table, relationships between the elements. The structures of metallic, ionic, covalent and molecular compounds, their properties in terms of the different bonding models. Calculations on the mole, relative atomic mass, percentage abundance, and empirical and molecular formula.

Key skills required

Question and predict; plan and conduct experiments using equipment safely; record and process data; analyze and evaluate relationships in data; write a scientific report; good mathematical skills.

Assessed tasks

Practical Work Portfolio

Topic Tests

Research Tasks: metal extraction & carbon networks

Examination

UNIT 2 What makes water such a unique chemical?

The properties of water and the reactions that take place in water including solubility, precipitation, acid-base and redox reactions. Writing balanced equations and calculating quantities of mass, mole and concentration, and use pH to determine acidity. Various analytical and instrumental techniques to analyze water samples for different solutes, ions and chemical contaminants. The principles of stoichiometry are applied to gravimetric, volumetric and instrumental analyses of water samples to determine concentrations of various ions in solution.

Key skills required

As above for Unit 1 and adequate knowledge of Unit 1 course

Assessed tasks

Practical Work Portfolio

Topic Tests

Field Trip Report

Practical Investigation: Analysis of Water Samples

Examination