

# Chemistry

## General senior subject

General

Chemistry is the study of materials and their properties and structure. In Unit 1, students study atomic theory, chemical bonding, and the structure and properties of elements and compounds. In Unit 2, students explore intermolecular forces, gases, aqueous solutions, acidity and rates of reaction. In Unit 3, students study equilibrium processes and redox reactions. In Unit 4, students explore organic chemistry, synthesis and design to examine the characteristic chemical properties and chemical reactions displayed by different classes of organic compounds.

Chemistry aims to develop students':

- interest in and appreciation of chemistry and its usefulness in helping to explain phenomena and solve problems encountered in their ever-changing world
- understanding of the theories and models used to describe, explain and make predictions about chemical systems, structures and properties
- understanding of the factors that affect chemical systems and how chemical systems can be controlled to produce desired products
- appreciation of chemistry as an experimental science that has developed through independent and collaborative research, and that has significant impacts on society and implications for decision-making

- expertise in conducting a range of scientific investigations, including the collection and analysis of qualitative and quantitative data, and the interpretation of evidence
- ability to critically evaluate and debate scientific arguments and claims in order to solve problems and generate informed, responsible and ethical conclusions
- ability to communicate chemical understanding and findings to a range of audiences, including through the use of appropriate representations, language and nomenclature.

## Pathways

A course of study in Chemistry can establish a basis for further education and employment in the fields of forensic science, environmental science, engineering, medicine, pharmacy and sports science.

## Objectives

By the conclusion of the course of study, students will:

- describe ideas and findings
- apply understanding
- analyse data
- interpret evidence
- evaluate conclusions, claims and processes
- investigate phenomena.

## Structure

Unit 1	Unit 2	Unit 3	Unit 4
<b>Chemical fundamentals — structure, properties and reactions</b> <ul style="list-style-type: none"> <li>• Properties and structure of atoms</li> <li>• Properties and structure of materials</li> <li>• Chemical reactions — reactants, products and energy change</li> </ul>	<b>Molecular interactions and reactions</b> <ul style="list-style-type: none"> <li>• Intermolecular forces and gases</li> <li>• Aqueous solutions and acidity</li> <li>• Rates of chemical reactions</li> </ul>	<b>Equilibrium, acids and redox reactions</b> <ul style="list-style-type: none"> <li>• Chemical equilibrium systems</li> <li>• Oxidation and reduction</li> </ul>	<b>Structure, synthesis and design</b> <ul style="list-style-type: none"> <li>• Properties and structure of organic materials</li> <li>• Chemical synthesis and design</li> </ul>

## Assessment

Schools devise assessments in Units 1 and 2 to suit their local context.

In Units 3 and 4 students complete *four* summative assessments. The results from each of the assessments are added together to provide a subject score out of 100. Students will also receive an overall subject result (A–E).

### Summative assessments

Unit 3		Unit 4	
Summative internal assessment 1 (IA1): • Data test	10%	Summative internal assessment 3 (IA3): • Research investigation	20%
Summative internal assessment 2 (IA2): • Student experiment	20%		
Summative external assessment (EA): 50% • Examination — combination response			