



# CHEMISTRY

## General Senior Subject

Chemistry is the study of materials and their properties and structure.

Students study atomic theory, chemical bonding, and the structure and properties of elements and compounds. They explore intermolecular forces, gases, aqueous solutions, acidity and rates of reaction. They study equilibrium processes and redox reactions. They explore organic chemistry, synthesis and design to examine the characteristic chemical properties and chemical reactions displayed by different classes of organic compounds. Students develop their appreciation of chemistry and its usefulness; understanding of chemical theories, models and chemical systems; expertise in conducting scientific investigations. They critically evaluate and debate scientific arguments and claims in order to solve problems and generate informed, responsible and ethical conclusions, and communicate chemical understanding and findings through the use of appropriate representations, language and nomenclature.

Students learn and apply aspects of the knowledge and skills of the discipline (thinking, experimentation, problem-solving and research skills), understand how it works and how it may impact society.

### Pathways

The study of chemistry provides global work opportunities. Chemistry underpins understanding and progress in almost every sphere of science, technology and industry. It also makes a vital contribution to the economy, commerce and industry.

While many careers involve graduates using their chemistry skills directly, many employment destinations do not involve doing chemistry on a day-to-day basis. **Not all chemists wear white coats!**

### Objectives

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

- describe and explain scientific concepts, theories, models and systems and their limitations
- apply understanding of scientific concepts, theories, models and systems within their limitations
- analyse evidence
- interpret evidence
- investigate phenomena
- evaluate processes, claims and conclusions
- communicate understandings, findings, arguments and conclusions.

## 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).

## Formative assessments

Unit 1		Unit 2	
Formative internal assessment (FIA1):	10%	Formative internal assessment (FIA3):	20%
<ul style="list-style-type: none"> <li>• Data Test – examination</li> </ul>		<ul style="list-style-type: none"> <li>• Research Investigation</li> </ul>	
Formative internal assessment (FIA2):	20%		
<ul style="list-style-type: none"> <li>• Student Experiment – report</li> </ul>			
Formative internal assessment (FIA4): 50% <ul style="list-style-type: none"> <li>• Examination – combination responses covering Units 1 &amp; 2</li> </ul>			

## Summative assessments

Unit 3		Unit 4	
Summative internal assessment (IA1):	10%	Summative internal assessment (IA3):	20%
<ul style="list-style-type: none"> <li>• Data Test - examination</li> </ul>		<ul style="list-style-type: none"> <li>• Research Investigation</li> </ul>	
Summative internal assessment (IA2):	20%		
<ul style="list-style-type: none"> <li>• Student Experiment – report</li> </ul>			
Summative external assessment (EA): 50% <ul style="list-style-type: none"> <li>• Examination — combination responses covering Units 3 &amp; 4</li> </ul>			