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# VCE UNITS INFORMATION

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## VCE Chemistry Units 1 and 2

### CONTENT

#### Unit 1

The development and use of materials for specific purposes is an important human endeavour. In this unit, students investigate the chemical properties of a range of materials from metals and salts to polymers and nanomaterials. Using their knowledge of elements and atomic structure, students explore and explain the relationships between properties, structure and bonding forces within and between particles that vary in size from the visible, through nanoparticles, to molecules and atoms.

Students examine the modification of metals, assess the factors that affect the formation of ionic crystals and investigate a range of non-metallic substances from molecules to polymers and giant lattices and relate their structures to specific applications.

Students are introduced to quantitative concepts in chemistry including the mole concept. They apply their knowledge to determine the relative masses of elements and the composition of substances. Throughout the unit, students use chemistry terminology including symbols, formulas, chemical nomenclature and equations to represent and explain observations and data from experiments, and to discuss chemical phenomena.

#### Unit 2

Water is the most widely used solvent on Earth. In this unit, students explore the physical and chemical properties of water, the reactions that occur in water and various methods of water analysis.

Students examine the polar nature of a water molecule and the intermolecular forces between water molecules. They explore the relationship between these bonding forces and the physical and chemical properties of water. In this context, students investigate solubility, concentration, pH and reactions in water including precipitation, acid-base and redox. Students are introduced to stoichiometry and to analytical techniques and instrumental procedures, and apply these to determine concentrations of different species in water samples, including chemical contaminants. They use chemistry terminology including symbols, units, formulas and equations to represent and explain observations and data from experiments, and to discuss chemical phenomena. Students explore the solvent properties of water in a variety of contexts and analyse selected issues associated with substances dissolved in water.

### OUTCOMES

#### Unit 1

- Students should be able to relate the position of elements in the Periodic Table to their properties, investigate the structures and properties of metals and ionic compounds, and calculate mole quantities
- Students should be able to investigate and explain the properties of carbon lattices and molecular substances with reference to their structures and bonding, use systematic nomenclature to name organic compounds, and explain how polymers can be designed for a purpose
- Students should be able to investigate a question related to the development, use and/or modification of a selected material or chemical and communicate a substantiated response to the question