8. Year 11 Subjects 2011 (Science)

VCE Chemistry

Unit 1: The Big Ideas in Chemistry

Areas of Study:

Area of Study 1: The Periodic table

Area of Study 2: Materials

The Big Ideas of Chemistry Students examine the development of atomic theory and the structure of the periodic table as a framework for the study of the chemistry of the elements and their compounds. They explore the link between the electronic configuration of an element and the type of bonding in which it participates. Bonding models are used to explain the structure and properties of metals, ionic compounds, molecular compounds and network lattice substances. Students explore the development and application of new materials, such as alloys, polymers, biopolymers, ceramics and carbon nanotubes.

On completion of this unit, students should be able to:

- explain how evidence is used to develop or refine chemical ideas and knowledge
- use models of structure and bonding to explain the properties and applications of materials

Assessment:

Unit 1 consists of two outcomes:

- Outcome 1 - Students should be able to explain how evidence is used to develop or refine chemical ideas and knowledge.
- Outcome 2 – Students should be able to use models of structure and bonding to explain the properties and applications of materials.

Assessment Break-Down:

The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's overall performance designated for the unit.

Outcomes 1 and 2

- End of topic tests; experimental investigations - selected reports prepared under test conditions; an extended experimental investigation (requiring 3 - 5 hours of laboratory work); **OR** a summary report including annotations of three practical activities.

Assessment will include at least one of the following:

- A response to a stimulus material in written, oral, visual, or multimedia format; an analysis of first and/or second-hand data using structural questions; a written, oral, visual, multimedia, or web page presentation of new material/s or new use/s of an existing material
- There will be a mid-year examination.

8. Year 11 Subjects 2011 (Science)

VCE Chemistry (Cont…)

Unit 2: Environmental chemistry

Areas of Study:

Environmental Chemistry Students explore the special properties of water which make it important to living things and relate the properties to chemical bonding characteristics. Practical activities involving precipitation, acid-base and redox reactions enable the investigation of chemical reactions in aqueous solution. Students investigate the concepts of solubility, concentration and pH, while dealing with problems of pollution and maintaining the quality of water. The principles of green chemistry are introduced. The interaction between living things and the gases of the atmosphere is explored. Students investigate the roles of oxygen, carbon dioxide and nitrogen through the studies of the carbon and nitrogen cycles. State, national and global issues associated with the impact of human activities on the atmosphere are explored.

On completion of this unit, students should be able to:

- write balanced equations and apply these to qualitative and quantitative investigations of chemical reactions
- explain how chemical reactions and processes occurring on the atmosphere help sustain life on earth

NOTE: At Alphington Grammar School Units 1 and 2 Chemistry are pre-requisites for Units 3 and 4 Chemistry.

Assessment:

Unit 2 consists of two outcomes:

- Outcome 1 - Students should be able to write balanced equations and apply these to qualitative and quantitative investigations of reactions involving acids and bases, the formation of precipitates and gases, and oxidants and reductants.
- Outcome 2 - Students should be able to explain how chemical reactions and processes occurring in the atmosphere help to sustain life on earth.

Assessment Break-Down:

Outcomes 1 and 2

- End of topic tests; experimental investigations - selected reports prepared under test conditions; an extended experimental investigation - requiring 3 - 5 hours of laboratory work

One of the following:

- A response to a stimulus material in written, oral, visual, or multimedia format; an analysis of first and/or second-hand data using structural questions; a written, oral, visual, multimedia, or web page presentation of new material/s or new use/s of an existing material
- An end-of-year examination.