

## Unit 4: Skills and Techniques for Chemistry Investigations

### Outline Learning Plan

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

Topic and suggested assignments/activities
Introduction to unit and safety briefing
Formal teaching of atomic structure and periodic table Discussion on how elements are classified in the periodic table. Look at some elements to see how they differ from each other and are classified. Learners could attempt to identify 'mystery' elements
Formal teaching of ionic and covalent bonding Discussion of ionic and covalent materials and show samples of these to learners. Learners could attempt to identify 'mystery' materials as either ionic or covalent <b>Assignment 1: The Periodic Table and Bonding (AC 1.1, 1.2, 1.3)</b> – quiz where learners can identify elements 1 to 10 in the periodic table and classify them. Also identify materials as ionic or covalent. This could be an oral or written quiz
Formal teaching on chemical reactions Theory work on chemical changes including demonstration of reactions Practice writing equations for simple reactions, including word and simple balanced equations Discussion of the factors that affect chemical changes, the production of useful products and their properties Practical activity investigating factors that affect chemical changes, for simple reactions <b>Assignment 2: Chemical Reactions (AC 2.1 and 2.2)</b> – exercises on constructing and balancing simple chemical equations and observation, report on the factors affecting chemical changes
Theory work on how natural resources can be extracted from the Earth and its atmosphere, including identifying the useful chemical products and their applications Discussion and research of possible future fuels including their possible applications <b>Assignment 3: Natural Resources as Fuels (AC 3.1 and 3.2)</b> – research to identify useful chemical products, natural resources and future fuels, including the applications of all of these
Theory lesson on how to create useful chemical products including risk assessment and health and safety requirements Practical activities on creating useful chemical products, following health and safety requirements for <b>Assignment 4: Creation of Useful Chemical products (AC 4.1)</b> - observation of practical activities and report