Year 11 Chemistry Learning Outcomes

Unit 3: Chemical Calculations

- Work out relative formula mass of a range of substances using the periodic table.
- Calculate the number of moles in a substance, when given the mass and chemical formula.
- Use Avogadro's number to calculate the number of particles in a given amount of a substance.
- Calculate the mass of a substance produced in a chemical reaction.
- Balance equations using moles.
- Identify limiting reactants in a chemical reaction.
- Calculate the concentration of a solution from moles and volume.
- Rearrange formula triangles to calculate moles, concentration and volume.

Unit 4: Chemical Change

Unit 4.1: Chemical Changes

- Explain how to deduce an order of reactivity of metals based on experimental results.
- Describe oxidation and reduction in terms of gain or loss of oxygen.
- Describe, using equations, how some common metals react with oxygen, water and dilute acid.
- Describe what displacement is.
- Use the reactivity series to determine whether a reaction between a metal and a different metal salt will occur.
- Construct word equations for displacement reactions.
- Describe how metals can be extracted from ores.
- Describe the reaction of a metal with an acid.
- Construct the names of salts, using common metals and acids.
- Explain the difference between an alkali and base.
- Describe how you would obtain a pure, dry sample of a soluble salt from an insoluble base and a dilute acid.
- Construct balanced symbol equations for the reactions of acids with alkalis.
- Evaluate how universal indicator or a data logger can be used to determine the approximate pH of a solution.
- Explain the terms dilute and concentrated, and weak and strong in relation to acids.
- Describe how the concentration of hydrogen ions in a solution affects the numerical value of pH.

Unit 4.2: Electrolysis

- Describe what happens in electrolysis.

- Explain why ions are attracted to the electrodes.
- Predict the products of electrolysis.
- Describe electrolysis with half equations at the electrodes.
- Explain how water effects the products of electrolysis.
- Represent the reactions at each electrode using half equations.
- Explain the electrolysis of brine using half equations, classifying reactions at the electrode as oxidation or reduction.
- Describe the process of extracting aluminium from its ore.
- Construct the half equation at each electrode during the electrolysis of aluminium oxide.
- Explain why some metals are extracted by electrolysis and others with carbon.