# A Level Chemistry Course Overview

# Specification from 2015

| 3.1 Physical | 3.2 Inorganic | 3.3 Organic |
|---|---|---|
| 3.1.1 Atomic structure<br>3.1.2 Amount of substance<br>3.1.3 Bonding<br>3.1.4 Energetics<br>3.1.5 Kinetics<br>3.1.6 Equilibria<br>3.1.7 Redox | 3.2.1 Periodicity<br>3.2.2 Group 2<br>3.2.3 Group 7 | 3.3.1 Introduction to organic chemistry<br>3.3.2 Alkanes<br>3.3.3 Halogenalkanes<br>3.3.4 Alkenes<br>3.3.5 Alcohols<br>3.3.6 Organic analysis |
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| 3.1.8 Thermodynamics<br>3.1.9 Rates equations<br>3.1.10 Equilibrium constant $K_p$<br>3.1.11 Electrochemical cells<br>3.1.12 Acids and bases | 3.2.4 Properties of Period 3 elements and their oxides<br>3.2.5 Transition metals<br>3.2.6 Reactions of ions in aqueous solution | 3.3.7 Optical isomerism<br>3.3.8 Aldehydes and ketones<br>3.3.9 Carboxylic acids<br>3.3.10 Aromatic chemistry<br>3.3.11 Amines<br>3.3.12 Polymers<br>3.3.13 Amino acids, proteins & DNA<br>3.3.14 Organic synthesis<br>3.3.15 NMR spectroscopy<br>3.3.16 Chromatography |

## Required practicals

| 3.1 Physical | 3.2 Inorganic | 3.3 Organic |
|---|---|---|
| 1. Make up a volumetric solution and carry out a simple acid-base titration<br>2. Measure an enthalpy change<br>3. Investigate how the rate of a reaction changes with temperature | 4. Carry out simple test tube reactions to identify cations and anions in aqueous solution | 5. Distil a product from a reaction<br>6. Tests for alcohol, aldehyde, alkene and carboxylic acid |
| | | |
| 7. Measure the rates of reaction:<br>- by initial rate method<br>- by a continuous monitoring method<br>8. Measure the EMF of a cell<br>9.Investigate how pH changes when a weak acid reacts with a strong base and when a strong acid reacts with a weak base | 11. Carry out simple test tube reactions to identify transition metal ions in aqueous solution | 10. Preparation of:<br>- a pure organic solid and test its purity<br>- a pure organic liquid<br>12. Separation of species by thin-layer chromatography |