The English Martyrs Catholic School and Sixth Form College

Chemistry Year 12 - A	Module 1	Module 2	Module 3
Topic Theme and Intent	Students learn about **atomic structure and amount of substance.** These topics are studied as they are fundamental to the further study of chemistry. Students learn about subshells and orbitals and the physical evidence for them. They also learn about calculating chemical quantities of solids, liquids, gases and solutions.	Students learn about **bonding** and **energetics.** Bonding is studied so that students can understand how bonding affects physical properties of materials. Energetics is studied so that students can quantify the energy changes during a reaction and it provides the building blocks for study of Thermodynamics.	Students learn about **kinetics and equilibria.** Kinetics is studied so that students can understand the factors which affect the rate of reaction and start to measure these accurately. Equilbria are studied to understand the importance of reversible reactions in chemical manufacturing and healthcare.
Knowledge	• Electronic structure including sub-shells and orbitals • Physical properties including atomic radius and ionisation enthalpy • Molar calculations • Ideal gas law calculations	• Types of bonding • Shapes of molecules • Intermolecular forces • Enthalpy change • Measuring enthalpy change	• Rates of reaction • Maxwell Boltzman distribution of energies • Le Chatelier's principle • Calculations involving K_c
Skills	Students make up a standard solution and determine the concentration of an unknow solution using titration technique.	Students measure the enthalpy change of solution using calorimetry. Students analyse data using extrapolation.	Students measure the rate of a chemical reaction and investigate the effect of changing the temperature.
Literacy Links	**Reading –** Students will read about the structure of atoms. **Writing –** Students start to communicate scientific ideas and concepts through writing. **Oracy –** Students start to use scientific vocabulary in discussion and question and answering.	**Reading –** Students will read about the shapes of molecules. **Writing –** Students practise communicating scientific ideas and concepts through writing. **Oracy –** Students practise the use scientific vocabulary in discussion and question and answering.	**Reading –** Students will read about the importance of controlling the rate of reaction. **Writing –** Students will communicate scientific ideas and concepts through writing. **Oracy –** Students use scientific vocabulary in discussion and question and answering.
Essential Vocabulary	Sub-shell, orbital, ionisation, ideal gas, kelvin	Van der Waals, Permanent dipole, Hydrogen bonding, Tetrahedral, Octahedral, Enthalpy, Extrapolation	Maxwell Boltzman, Most probable energy, K_c, Equilibrium constant

Disciplinary Reading	Reading for Pleasure		
CGP Books – A level Chemistry, & Oxford Revise A level Chemistry.	S. Kean - The Disappearing Spoon	W. Brock - Chemistry: a very short introduction	P. Le Couteur - Napoleon's Buttons