Year Group: 12	Subject: Chemistry	Term: Summer 2022

Topic	Key Learning points	Assessment
Further equilibrium	*End Point: To understand the use of equilibrium constants, be able to calculate them and understand the factors affecting equilibrium constants.* • Deduce an expression for Kc for homogeneous and heterogeneous reactions • Use expressions for Kc to calculate its value and deduce the appropriate units • Deduce an expression for Kp for homogeneous and heterogeneous reactions • Use expressions for Kp to calculate its value and deduce the appropriate units • Describe and explain the effects of temperature on the position of equilibrium and therefore on the equilibrium constant for both exothermic and endothermic reactions • Explain why changes in concentration, pressure or addition of catalysts do not affect the equilibrium constant for a reaction	Students will be formatively assessed during each topic by past paper questions completed in lesson time. • Students will complete homework assignments as ongoing assessment of understanding. • Teachers will provide students with targeted feedback, based on their test performance. During this term students will complete their UCAS prediction exams, which will cover content from topics 110 from the book 1 textbook provided for the course.
Further kinetics	*End Point: To understand how to identify orders of reactions and select appropriate experimental techniques for both continuous rate methods and initial rate methods.* • Understand the term “rate of reaction” and be able to select and explain suitable practical techniques for obtaining rate data, e.g. evolved gas volumes, changes in mass, colourimetry, titrations, etc. • Be able to define the following terms; rate equation, order of reaction with respect to a substance within a rate equation, overall order of a reaction, rate constant, rate determining step, half-life, activation energy, homogenous catalysis, heterogenous catalysis, autocatalysis. • Recall the methods that can be used to investigate reaction rates and be able to calculate; rate of reaction • Deduce the order with respect to a substance and for an overall reaction from: concentration-time graphs, initial rate methods, rate-concentration graphs. • Identify the rate determining step for a reaction from its rate equation • Deduce the reaction mechanism for a reaction from its rate equation and balanced symbol equation • Use the Arrhenius equation to explain the effect of temperature on a rate constant. • Use graphical methods to deduce the activation energy for a reaction from experimental data.	
Orbitals and Reactions in Organic Chemistry	*End Point: Know how two atomic orbitals can overlap to form a molecular orbital. Describe reactions mechanistically, referring to orbitals and areas of electron density.* • Define the terms electrophile & nucleophile and categorise reactions as addition, elimination or substitution • Describe how sigma bonds and pi bonds are formed from the overlap of atomic orbitals • Understand that bond fission can be homolytic or heterolytic • Describe the bonding in a C=C double bond and carbonyl C=O, referring to molecular orbitals • Understand the steps in the nucleophilic addition of carbonyl compounds and the electrophilic substitution of aromatic compounds and be able to represent these with a mechanism • Describe the structure and bonding of benzene • Understand how the electron donating and withdrawing effects of substituents can affect reactivity	