Bellerive FCJ Catholic College

Department: Chemistry A Level **Year Group: 12**

Term	Learning Focus	Key Knowledge and Skills	Assessment	Challenge and Enrichment
1	**Physical Chemistry** 3.1.1 Atomic structure 3.1.2 Amount of substance 3.1.3 Bonding 3.1.4 Energetics **Organic Chemistry** 3.3.1 Introduction to organic chemistry 3.3.2 Alkanes 3.3.3 Halogenoalkanes	• Fundamental particles, Mass number and isotopes, Electron configuration • Relative atomic mass and relative molecular mass, The mole and Avogadro constant, The ideal gas equation, Empirical and molecular formula, Balanced equations and associated calculations • Ionic bonding, Nature of covalent and dative covalent bonds, Metallic bonding, Bonding and physical properties, Shapes of simple molecules and ions, Bond Polarity, Forces between molecules • Enthalpy change, Calorimetry • Nomenclature, Reaction mechanisms, Isomerism, • Fractional distillation of crude oil, Modification of alkanes by cracking, Combustion of alkanes, Chlorination of alkanes • Nucleophilic substitution, Elimination	Atomic structure HW + test Required Practical 1a and 1b Amount of substance HW + test Bonding HW + test Intro to Organic HW Alkanes HW	Allery Chemistry (You Tube) A Level Chemistry (Resources) Doc Brown
2	**Physical Chemistry** 3.1.4 Energetics 3.1.5 Kinetics 3.1.7 Oxidation, reduction and redox **Organic Chemistry** 3.3.3 Halogenoalkanes	• Calorimetry, Applications of Hess's law, Bond enthalpies • Collision theory, Maxwell–Boltzmann distribution, Effect of concentration and pressure, Effect of catalysts • Redox • Ozone depletion	Y12 mock examinations Required Practical 2 Energetics HW Required Practical 6 Kinetics HW Physical Test Halogenoalkanes HW	

	3.3.4 Alkenes 3.3.5 Alcohols 3.3.6 Organic Analysis	• Structure, bonding and reactivity, Addition reactions of alkenes, Addition reactions of alkenes, Addition polymers • Oxidation of alcohols, Elimination • Identification of functional groups by test-tube reactions, Mass Spectrometry, Infra-red spectroscopy	Alkenes HW Required Practical 5a Required Practical 5b Alcohols HW Organic Analysis HW	
3	**Physical Chemistry** 3.1.6 Chemical equilibria 3.1.7 Oxidation, reduction and redox **Inorganic Chemistry** 3.2.1 Periodicity 3.2.2 Group II 3.2.3 Group VII **Physical Chemistry** Year 2 Topics: 3.1.8 Thermodynamics **Organic Chemistry** Year 2 Topics: 3.3.7 Optical Isomerism 3.3.8 Aldehydes and ketones 3.3.9 Carboxylic acids and derivatives	• Chemical equilibria and Le Chatelier's principle, Equilibrium constant K_c for homogeneous systems • Classification, Physical properties of the Period 3 elements • Group 2, the alkaline earth metals • Trends in properties (Group VII), Uses of chlorine and chlorate(I) • Born-Haber Cycles, Gibbs free-energy change ΔG and entropy change ΔS • Optical isomerism • Aldehydes and ketones • Carboxylic acids and esters, Acylation	Required Practical 3 Organic test Y12 mock examinations Redox HW Equilibria HW Periodicity HW Group II HW Group VII HW Thermodynamics HW Isomerism HW Aldehydes and ketones HW	