KS5 Curriculum Overview: **A-Level Chemistry**

	Autumn Term	Spring Term	Summer Term
Year 12	**Curriculum:** Teachers 1 and 2: Module 2** Foundations of Chemistry • Atoms, ions and compounds • Amount of substance • Acids and redox • Electrons and Bonding • Shapes of molecules and intermolecular forces Teacher 1: Module 3 Periodic Table and Energy Topics: Periodicity and Reactivity trends • Periodic table • Ionisation energies • Periodic trends in bonding and structure • Group 2 • The halogens • Qualitative analysis Teacher 2: Module 4 Core Organic Chemistry and Analysis Topic: Basic Concepts of Organic Chemistry and Alkanes • Organic chemistry • Nomenclature of organic compounds • Representing formulae of organic compounds • Isomerism • Reaction mechanisms • Properties of alkanes • Chemical reactions of alkanes	**Curriculum:** Teacher 1: Module 3 Periodic Table and Energy Topic: Enthalpy • Enthalpy changes • Measuring enthalpy changes • Bond enthalpies • Hess' law and enthalpy cycles Teacher 2: Module 4 Core Organic Chemistry and Analysis Topics: Alkenes, Alcohol and Haloalkanes • Properties of alkenes • Stereoisomerism • Reactions of alkenes • Electrophilic addition in alkenes • Polymerisation of alkenes • Properties of alcohols • Reactions of alcohols • Chemistry of haloalkanes • Orangohalogen compounds in the environment	**Curriculum:** Teacher 1: Module 3 Periodic Table and Energy Topics: Reaction rates and Equilibrium • Reaction rates • Catalysts • The Boltzmann distribution • Dynamic equilibrium and le Chatelier's principle • The equilibrium constant K_c – part 1 Teacher 1: Module 5 Physical Chemistry and Transition Elements Topic: Rates of Reactions • Orders, rate equations, and rate constants • Concentration-time graphs • Rate-concentration graphs • Rate-determining step • Rate constants and temperature Teacher 2: Module 4 Core Organic Chemistry and Analysis Topic: Organic Synthesis and Spectroscopy • Practical techniques in organic chemistry • Synthetic routes • Mass spectroscopy • Infrared spectroscopy Teacher 2: Module 6 Organic Chemistry and Analysis Topic: Aromatic Chemistry • Introducing benzene • Electrophilic substitution reactions of benzene • The chemistry of phenol • Distribution and directing groups
	Formal Assessment*: Transition test Interim and end of topic tests for all units: Weekly homework set including past paper question practice. Assessed practical activities: • **PAG 1.2:** Determination of the RAM of Magnesium • **PAG 1.3:** Determination of the formula of Magnesium oxide • **PAG 2.1:** Determination of the concentration of Hydrochloric acid	**Formal Assessment*:** Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities: • **PAG 3.1:** Determination of the enthalpy change of neuralisation • **PAG 3.2**: Determination of the enthalpy change of reaction by Hess' Law • **PAG 3.3**: Determination of the enthalpy change of combustion	**Formal Assessment*:** Interim and end of topic tests for all units. Weekly homework set including past paper question practice. Assessed practical activities: • **PAG 12.1:** Investigating Iron tablets • **PAG 12.2:** Investigating the copper content of brass screws **End of Y12 Mock Exams**

	• **PAG 2.2:** Determination of the molar mass of an acid • **PAG 4.2:** Identifying unknowns 2	• **PAG 5.1:** Preparation of a haloalkane • **PAG 6.1:** Preparation of an organic solid aspirin **First Mock Exam after Christmas Holidays**	

**At CamSF, assessment happens at many levels and is perhaps most important when teachers assess what students have learned and remembered within the classroom. Timely feedback is so important in enabling progress and knowledge retention.*

***Module 1 concerns practical skills and is taught throughout the course*

KS5 Curriculum Overview: **A-Level Chemistry**

	Autumn Term	Spring Term	Summer Term
Year 13	**Curriculum:** Teacher 1: Module 5 Physical Chemistry and Transition Elements Topics: Equilibria and Acid, Bases and pH • The equilibrium constant K_C- part 2 • The equilibrium constant K_P • Controlling the position of equilibrium • Brønsted-Lowry acid and bases • The acid disassociated constant K_a • The pH of weak acids • pH and strong bases • Buffer solutions • Buffer solutions in the body • Neutralisation Teacher 2: Module 6 Organic Chemistry and Analysis Topic: Carbonyls and Carboxylic Acid • Carbonyl compounds • Identifying aldehydes and ketones • Carboxylic acids • Carboxylic acid derivatives	**Curriculum:** Teacher 1: Module 5 Physical Chemistry and Transition Elements Topics: Enthalpy and Entropy and Redox and Electrode Potentials • Lattice enthalpy • Enthalpy changes in solution • Factors affecting lattice enthalpy and hydration • Entropy • Free energy • Redox reactions • Manganate (VII) redox titrations • Iodine/thiosulfate redox titrations • Electrode potentials • Predictions from electrode potentials • Storage and fuel cells Teacher 2: Module 6 Organic Chemistry and Analysis Topic: Amines, Amino Acids and Proteins and Organic Synthesis • Amines • Amino acids, amides, and chirality • Condensation polymers • Carbon-carbon bond formation • Further practical techniques • Further synthetic routes	**Curriculum:** Teacher 1: Module 5 Physical Chemistry and Transition Elements Topics: Transition Elements • D-block elements • The formation and shapes of complex ions • Stereoisomerism in complex ions • Ligand substitutions and precipitation • Redox and qualitative analysis Teacher 2: Module 6 Organic Chemistry and Analysis Topic: Chromatography and Spectroscopy • Chromatography and functional group analysis • Nuclear magnetic resonance (NMR) spectroscopy • Carbon-13 spectroscopy • Proton NMR spectroscopy • Interpreting NMR spectra • Combined techniques Teachers 1 and 2: Unifying Concepts
	Formal Assessment*: Interim and end of topic tests for all units. Weekly homework set including past paper question practice.	**Formal Assessment*:** Interim and end of topic tests for all units. Weekly homework set including past paper question practice.	**Formal Assessment*:** Interim and end of topic tests for all units. Weekly homework set including past paper question practice.

	Assessed practical activities: • **PAG 6.2:** Preparation of benzoic acid • **PAG 7.3:** Qualitative analysis of organic functional groups • **PAG 9.2:** The rate of reaction of calcium carbonate and hydrochloric acid • **PAG 10.2:** Rates-thiosulfate and acid • **PAG 10.3:** Rates- activation energy • **PAG 11.2:** pH titration curves • **PAG 11.3:** pH acids and buffers	Assessed practical activities: • **PAG 8.1:** Electrochemical cells • PAG MOPS UPS **Y13 Mock Exams before February Half Term**	**Final Exams**

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