

**Chemistry**  
**Year 12 curriculum map**

Year 12	T1	T2	T3	T4	T5	T6
Content / Topic for Term	Atomic structure  Introduction to organic chemistry  Alkanes	Amount of substance  Halogenoalkanes  Alkenes	Bonding  Energetics  Kinetics	Periodicity  Group 2  Equilibria  Redox	Group 7  Alcohols  Organic analysis	Aromatic chemistry  Period 3 elements
Key Knowledge for acquisition, recall and application in assessment or exam	Atomic structure <ul style="list-style-type: none"> <li>fundamental particles</li> <li>mass number, atomic number and isotopes</li> <li>the arrangement of electrons</li> <li>the mass spectrometer</li> <li>electron arrangements</li> <li>ionisation energy</li> </ul> Introduction to organic chemistry <ul style="list-style-type: none"> <li>carbon compounds</li> <li>nomenclature</li> <li>isomerism</li> </ul>	Amount of substance <ul style="list-style-type: none"> <li>relative atomic and molecular masses, the Avogadro constant and the mole</li> <li>moles in solution</li> <li>the ideal gas equation</li> <li>empirical and molecular formulae</li> <li>balanced equations and related calculations</li> <li>atom economy and percentage yield</li> </ul>	Bonding <ul style="list-style-type: none"> <li>the nature of ionic bonding</li> <li>covalent bonding</li> <li>metallic bonding</li> <li>electronegativity</li> <li>intermolecular forces</li> <li>shapes of molecules and ions</li> <li>bonding and physical properties</li> </ul> Energetics <ul style="list-style-type: none"> <li>exothermic and endothermic reactions</li> <li>enthalpy</li> </ul>	Periodicity <ul style="list-style-type: none"> <li>the periodic table</li> <li>trends in period 3 elements</li> <li>ionisation energies in period 3</li> </ul> Group 2 <ul style="list-style-type: none"> <li>physical and chemical properties of group 2 elements</li> </ul> Equilibria <ul style="list-style-type: none"> <li>equilibrium</li> <li>changing conditions</li> <li>reactions in industry</li> </ul>	Group 7 <ul style="list-style-type: none"> <li>the halogens</li> <li>chemical reactions of the halogens</li> <li>reactions of halide ions</li> <li>uses of chlorine</li> </ul> Alcohols <ul style="list-style-type: none"> <li>alcohols</li> <li>ethanol production</li> <li>reactions of alcohols</li> </ul> Organic Analysis <ul style="list-style-type: none"> <li>test-tube reactions</li> <li>mass spectrometry</li> </ul>	Aromatic Chemistry <ul style="list-style-type: none"> <li>introduction to arenes</li> <li>physical properties, naming and reactivity</li> <li>reactions of arenes</li> </ul> Period 3 Elements <ul style="list-style-type: none"> <li>reactions of period 3 elements</li> <li>the oxides of elements in period 3</li> <li>the acidic/basic nature of period 3 oxides</li> </ul>

	<p>Alkanes</p> <ul style="list-style-type: none"> <li>• alkanes</li> <li>• fractional distillation</li> <li>• cracking</li> <li>• combustion</li> <li>• the formation of halogenoalkanes</li> </ul>	<p>Halogenoalkanes</p> <ul style="list-style-type: none"> <li>• halogenoalkanes</li> <li>• nucleophilic substitution</li> <li>• elimination reactions</li> </ul> <p>Alkenes</p> <ul style="list-style-type: none"> <li>• alkenes</li> <li>• reactions of the alkenes</li> <li>• addition polymerisation</li> </ul>	<ul style="list-style-type: none"> <li>• measuring enthalpy changes</li> <li>• Hess' law</li> <li>• enthalpy changes of combustion</li> <li>• thermochemical cycles</li> <li>• bond energies</li> </ul> <p>Kinetics</p> <ul style="list-style-type: none"> <li>• collision theory</li> <li>• the Maxwell-Boltzmann distribution</li> <li>• catalysts</li> </ul>	<ul style="list-style-type: none"> <li>• the equilibrium constant <math>K_c</math></li> <li>• calculations using <math>K_c</math></li> <li>• the effects of changing conditions on equilibria</li> </ul> <p>Redox</p> <ul style="list-style-type: none"> <li>• oxidation and reduction</li> <li>• oxidation states</li> <li>• redox equations</li> </ul>	<ul style="list-style-type: none"> <li>• infrared spectroscopy</li> </ul>	
Key skills to apply in assessment or exam	<ul style="list-style-type: none"> <li>• Nomenclature</li> <li>• Lab safety</li> <li>• Risk assessments</li> <li>• Calculations involving time of flight mass spectrometry</li> <li>• The use of curly arrows in mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Calculations using moles</li> <li>• Required practical 1 – making up a volumetric solution and carrying out a titration (link to CPAC criteria)</li> </ul>	<ul style="list-style-type: none"> <li>• Calculations using <math>Q=MCAT</math> and bond energies</li> <li>• Required practical 2 – measurement of an enthalpy change (link to CPAC criteria)</li> <li>• Required practical 3 – investigation of how rate changes with</li> </ul>	<ul style="list-style-type: none"> <li>• Calculations using <math>K_c</math> the equilibrium constant</li> <li>• Identification of trends in properties</li> <li>• Plotting graphs</li> </ul>	<ul style="list-style-type: none"> <li>• Required practical 4 – test tube reactions to identify cations and anions (link to CPAC criteria)</li> <li>• Required practical 5 – distillation of a product from a reaction (link to CPAC criteria)</li> <li>• Required practical 6 – testing for alcohols, aldehydes,</li> </ul>	

**Chemistry**  
**Year 12 curriculum map**



			temperature (link to CPAC criteria)		alkenes and carboxylic acids (link to CPAC criteria)	
Title of Knowledge Organiser	Atomic structure  Introduction to organic chemistry  Alkanes	Amount of substance  Halogenoalkanes  Alkenes	Bonding,  Energetics  Kinetics	Periodicity  Group 2  Equilibria  Redox	Group 7  Alcohols  Organic analysis	Aromatic chemistry