

Course Outline: Chemistry St Aidan's Year 12

Rationale: The first unit on the chemistry course is chemistry fundamentals (module 2), these are basic aspects of chemistry that build on knowledge from GCSE and underpin the concepts that will be studied throughout the rest of the course. Once the fundamentals are in place they are built upon by looking at the introduction of both inorganic chemistry/physical chemistry in module 3 and organic chemistry in module 4. Once these units have been completed then students have a good grounding in the three strands of chemistry and these are then built upon in module 5, further inorganic/physical chemistry and module 6 further organic chemistry. Module 3 and 4 rely on an understanding of the basic fundamentals of chemistry and these are revisited in all units throughout the course. Modules 5 and 6 cannot be accessed without the basic concepts covered in modules 3 and 4 and so are started at the end of year 12 and then continue into year 13. Module 1 is practical chemistry skills and this runs alongside the theory modules throughout the course with specific practical skills assessed for the practical endorsement at appropriate points.

	CONTENT	KEY/FUNDAMENTAL CONCEPTS	ASSESSMENT
Autumn Term	<ul style="list-style-type: none"> ➤ Teacher 1 ➤ Module 2 ➤ C2 Atoms, ions & compounds ➤ C3 Amount of substance ➤ C4 Acids & redox 	<ul style="list-style-type: none"> ➤ Module 2 ➤ 2.2 Relative mass (2.1.1) ➤ 2.3 Formulae and equations (2.1.2) ➤ 3.1 Amount of substance and the mole (2.1.3) ➤ 3.2 Determination of formula (2.1.1/2.1.3) <ul style="list-style-type: none"> ○ PAG 1 ➤ 3.3 Moles and volumes (2.1.3) ➤ 3.4 Reacting quantities (2.1.3) ➤ 4.1 Acids, bases and neutralisation (2.1.4) ➤ 4.2 Acid – base titration (2.1.4/2.1.3) <ul style="list-style-type: none"> ○ PAG 2 ➤ 4.3 Redox (2.1.5) 	<ul style="list-style-type: none"> ➤ Chapter 3 and 4 test – 52 marks of PEQ on 3.1 – 4.3 – completed in class under test conditions – links to all exams ➤ PAG 1 – calculating empirical formula – practical activity, specific practical skills and analysis skills assessed ➤ PAG 2 – Acid – Base titration – practical activity, specific practical skills and analysis skills assessed
	<ul style="list-style-type: none"> ➤ Teacher 2 ➤ Module 2 ➤ C2 Atoms, ions & compounds ➤ C5 Electrons & bonding ➤ C6 Shapes of Molecules 	<ul style="list-style-type: none"> ➤ Module 2 ➤ 2.1 Atomic structure and isotopes (2.1.1) ➤ 5.1 Electron structure (2.2.1) ➤ 5.2 Ionic bonding and structure (2.2.2) ➤ 5.3 Covalent bonding (2.2.2) ➤ 6.1 Shapes of molecules and ions (2.2.2) ➤ 6.2 Electronegativity and polarity (2.2.2) ➤ 6.3 Intermolecular forces (2.2.2) ➤ 6.4 Hydrogen bonding (2.2.2) 	<ul style="list-style-type: none"> ➤ Module 2 test – 54 marks of PEQ covering chapters 2 – 6 – completed in class under test conditions – links to all exams ➤ Weekly PEQ worth 10 – 20 marks
	Half-term		
	<ul style="list-style-type: none"> ➤ Teacher 1 ➤ Module 3 ➤ C7 Periodicity ➤ C8 Reactivity trends 	<ul style="list-style-type: none"> ➤ Module 3 ➤ 7.1 The periodic table (3.1.1) ➤ 7.2 Ionisation energies (3.1.1) ➤ 7.3 Periodic trends in bonding and structure (3.1.1) ➤ 8.1 Group 2 (3.1.2) ➤ 8.2 The halogens (3.1.3) ➤ 8.3 Qualitative analysis (3.1.4) <ul style="list-style-type: none"> ○ PAG 4 	<ul style="list-style-type: none"> ➤ PAG 4 – identifying ions and writing a method – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks

	<ul style="list-style-type: none"> ➤ Teacher 2 ➤ Module 4 ➤ C11 Basic concepts of organic ➤ C12 Alkanes 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 11.1 Organic chemistry (4.1.1) ➤ 11.2 Nomenclature of organic compounds (4.1.1) ➤ 11.3 Representing the formula of organic compounds (4.1.1) ➤ 11.4 Isomerism (4.1.1) ➤ 11.5 Introduction to reaction mechanisms (4.1.1) ➤ 12.1 Properties of the alkanes (4.1.2) ➤ 12.2 Chemical reaction of the alkanes (4.1.2) 	<ul style="list-style-type: none"> ➤ Chapter 11 test 	
Christmas Holiday				
Spring Term	<ul style="list-style-type: none"> ➤ Teacher 1 ➤ Module 3 ➤ C9 Enthalpy 	<ul style="list-style-type: none"> ➤ Module 3 ➤ 9.1 Enthalpy changes (3.2.1) ➤ 9.2 Measuring enthalpy changes (3.2.1/2.1.3) <ul style="list-style-type: none"> ○ PAG 3 ➤ 9.3 Bond enthalpies (3.2.1) ➤ 9.4 Hess' law and enthalpy cycles (3.2.1) 	<ul style="list-style-type: none"> ➤ Chapter 9 test – 52 marks of PEQ on 9.1 – 9.4 – completed in class under test conditions – links to exam 1 and 3 ➤ PAG 3 – Enthalpy changes – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks 	
	<ul style="list-style-type: none"> ➤ Teacher 2 ➤ Module 4 ➤ C13 Alkenes ➤ C14 Alcohols 	<ul style="list-style-type: none"> ➤ 13.1 The properties of the alkenes (4.1.3) ➤ 13.2 Stereoisomerism (4.1.3) ➤ 13.3 Reaction of alkenes (4.1.3) ➤ 13.4 Electrophilic addition in alkenes (4.1.3) ➤ 13.5 Polymerisation in alkenes (4.1.3) ➤ 14.1 Properties of alcohols (4.2.1) ➤ 14.2 Reaction of alcohols (4.2.1) 	<ul style="list-style-type: none"> ➤ Chapter 13 test – PEQ on 13.1 – 13.5 – completed in class under test conditions – links to exam 2 and 3 	
	Half-term			
	<ul style="list-style-type: none"> ➤ Teacher 1 ➤ Module 3 ➤ C10 Reaction rates & equilibrium 	<ul style="list-style-type: none"> ➤ 10.1 Reaction rates (3.2.2/2.1.3) ➤ 10.2 Catalysts (3.2.2) ➤ 10.3 The Boltzmann distribution (3.2.2) ➤ 10.4 Dynamic equilibrium and le Chatelier's principle (3.2.3) ➤ 10.5 The equilibrium constant Kc – part 1 (3.2.3) 	<ul style="list-style-type: none"> ➤ Module 3 test – 54 marks of PEQ covering chapters 7 – 10 – completed in class under test conditions – links to exams 1 and 3 	
	<ul style="list-style-type: none"> ➤ Teacher 2 ➤ Module 4 ➤ C15 Haloalkanes ➤ C16 Organic synthesis 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 15.1 The chemistry of the haloalkanes (4.2.2) ➤ 15.2 Organohalogen compounds in the environment (4.2.2) ➤ 16.1 Practical techniques in organic chemistry (4.2.3) <ul style="list-style-type: none"> ○ PAG 5 ➤ 16.2 Synthetic routes (4.2.3) 	<ul style="list-style-type: none"> ➤ PAG 5 – Reflux and oxidation of alcohols – practical activity using quick fit apparatus, specific practical skills and analysis skills assessed 	
Easter Holiday				

Summer Term	<ul style="list-style-type: none"> ➤ Teacher 1 ➤ Revision for mock exam 	<ul style="list-style-type: none"> ➤ Revision of modules 2 – 4 content and module 1 practical activities in preparations for the mock exam (see above for detailed content) 	<ul style="list-style-type: none"> ➤ Mock Exam – PEQ worth 70 marks covering material from module 1 – 4 – in exam conditions in Constance Green
	<ul style="list-style-type: none"> ➤ Module 5 ➤ C18 Rates of reaction 	<ul style="list-style-type: none"> ➤ Module 5 ➤ 18.1 Orders, rate equations, and rate constants (5.1.1) ➤ 18.2 Concentration – time graphs (5.1.1) ➤ 18.3 Rate – concentration graphs and initial rates (5.1.1) 	
	<ul style="list-style-type: none"> ➤ Teacher 2 ➤ Module 4 ➤ C17 Spectroscopy 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 17.1 Mass spectrometry (4.2.4) ➤ 17.2 Infrared spectroscopy (4.2.4) 	
	<ul style="list-style-type: none"> ➤ Revision for mock exam 		
	Half-term		
<ul style="list-style-type: none"> Module 5 Teacher 1 ➤ C18 Rates of reaction 	<ul style="list-style-type: none"> ➤ Module 5 ➤ 18.3 Rate – concentration graphs and initial rates (5.1.1) <ul style="list-style-type: none"> ○ PAG 9 ○ PAG 10 ➤ 18.4 Rate-determining step (5.1.1) ➤ 18.5 Rate constants and temperature (5.1.1) 	<ul style="list-style-type: none"> ➤ PAG 9 – Rate of reaction – practical activity, specific practical skills and analysis skills assessed ➤ PAG 10 – Rate of reactions, including drawing computer graphs – practical activity, specific practical skills and analysis skills assessed 	
<ul style="list-style-type: none"> Module 6 Teacher 2 ➤ C25 Aromatic chemistry 	<ul style="list-style-type: none"> ➤ Module 6 ➤ 25.1 Introducing benzene (6.1.1) ➤ 25.2 Electrophilic substitution reactions of benzene (6.1.1) ➤ 25.3 The chemistry of phenol (6.1.1) 		

Notes:

PEQ = Past Exam Questions

In the key/fundamental concepts column the number in the bracket *i.e.*(2.1.1) refer to the specification statements



Course Outline:

Chemistry

Year 13

	CONTENT	KEY/FUNDAMENTAL CONCEPTS	ASSESSMENT
Autumn Term	Module 5 Teacher 1 <ul style="list-style-type: none">➤ C19 Equilibrium➤ C20 Acids, bases & pH	Module 5 <ul style="list-style-type: none">➤ 19.1 The equilibrium constant K_c – part 2 (5.1.2)➤ 19.2 The equilibrium constant K_p (5.1.2)➤ 19.3 Controlling the position of equilibrium (5.1.2)➤ 20.1 Brønsted – Lowry acids and bases (5.1.3)➤ 20.2 The pH scale and strong acids (5.1.3)➤ 20.3 The acid dissociation constant K_a (5.1.3)➤ 20.4 The pH of weak acids (5.1.3)➤ 20.5 pH and strong bases (5.1.3)	<ul style="list-style-type: none">➤ Chapter 18 test – PEQ on 18.1 – 18.5 – completed in class under test conditions – links to exam 1 and 3➤ Chapter 21 test – PEQ on 21.1 – 21.3 – completed in class under test conditions – links to exam 1 and 3
	Module 6 Teacher 2 <ul style="list-style-type: none">➤ C25 Aromatic chemistry➤ C26 Carbonyls & carboxylic acids	Module 6 <ul style="list-style-type: none">➤ 25.4 Directing groups (6.1.1)➤ 26.1 Carbonyl compounds (6.1.2)➤ 26.2 Identifying aldehydes and ketones (6.1.2)➤ 26.3 Carboxylic acids (6.1.3)➤ 26.4 Carboxylic acid derivatives (6.1.3)<ul style="list-style-type: none">○ PAG 7	<ul style="list-style-type: none">➤ PAG 7 – Formation of organic compounds – practical activity, specific practical skills and analysis skills assessed➤ Chapter 25 test – PEQ on 25.1-25.4 – completed in class under test conditions – links to exam 2 and 3
	Half-term		
	Module 5 Teacher 1 <ul style="list-style-type: none">➤ C21 Buffers & neutralisation➤ C22 Enthalpy & entropy	Module 5 <ul style="list-style-type: none">➤ 21.1 Buffer solutions (5.1.3)➤ 21.2 Buffer solutions in the body (5.1.3)➤ 21.3 Neutralisation (5.1.3)<ul style="list-style-type: none">○ PAG 11➤ 22.1 Lattice Enthalpy (5.2.1)➤ 22.2 Enthalpy changes in solution (5.2.1)➤ 22.3 Factors affecting lattice enthalpy and hydration (5.2.1)➤ 22.4 Entropy (5.2.2)➤ 22.5 Free energy (5.2.2)	<ul style="list-style-type: none">➤ Module 4 test – 54 marks of PEQ covering chapters 11 – 17 – completed in class under test conditions – links to exams 2 and 3➤ PAG 11 – buffers or pH curves – practical activity, specific practical skills and analysis skills assessed➤ Mock Exam – PEQ worth 100 marks covering material from module 1 – 5 – in exam conditions in Constance Green

	Module 6 Teacher 2 ➤ C27 Amines, amino acids & proteins	➤ 27.1 Amines (6.2.1) ➤ 27.2 Amino acids, amides and chirality (6.2.2) ➤ 27.3 Condensation polymers (6.2.3)	➤ Chapter 27 test –PEQ on 27.1-27.3 – completed in class under test conditions – links to exam 2 and 3
Christmas Holiday			
Spring Term	Module 5 Teacher 1 ➤ C23 Redox & electrode potentials ➤ C24 Transition elements	➤ 23.1 Redox reactions (5.2.3) ➤ 23.2 Manganate(VII) redox titrations (5.2.3) ➤ 23.3 Iodine/thiosulfate redox titrations ○ <i>Practical activities: redox titrations</i> ➤ 23.4 Electrode potentials (5.2.3) ○ <i>PAG 8</i> ➤ 23.5 Predictions from electrode potentials (5.2.3) ➤ 23.6 Storage and fuel cells (5.2.3) ➤ 24.1 d-block elements (5.3.1) ➤ 24.2 The formation and shapes of complex ions (5.3.1) ➤ 24.3 Stereoisomerism in complex ions (5.3.1) ➤ 24.4 Ligand substitution and precipitation (5.3.1) ➤ 24.5 Redox and qualitative analysis (5.3.1)	➤ PAG 8 – Electrochemical cells – practical activity, specific practical skills and analysis skills assessed ➤ Module 5 test – 54 marks of PEQ covering chapters 18 – 24 – completed in class under test conditions – links to exams 1 and 3
	Module 6 Teacher 2 ➤ C28 Organic synthesis	➤ 28.1 Carbon – carbon bond formation (6.2.4) ➤ 28.2 Further practical techniques (6.2.5) ○ <i>PAG 6</i> ➤ 28.3 Further synthetic routes (6.2.5)	➤ Chapter 28 test –PEQ on 28.1-28.3 – completed in class under test conditions – links to exam 2 and 3
	Half-term		
	Module 5 Teacher 1 ➤ Revision	Final PAG ➤ <i>PAG 12 – Research skills – research a reaction, write a method, write a risk assessment and then complete the practical activity and process the results</i>	➤ PAG 12 – Research skills – practical activity, specific practical skills and analysis skills assessed

	Module 6 Teacher 2 ➤ C29 Chromatography & spectroscopy	Module 6 ➤ 29.1 Chromatography and functional group analysis (6.3.1) ➤ 29.2 Nuclear Magnetic Resonance (NMR) spectroscopy (6.3.2) ➤ 29.3 Carbon-13 NMR spectroscopy (6.3.2) ➤ 29.4 Proton NMR spectroscopy (6.3.2) ➤ 29.5 Interpreting NMR spectra (6.3.2) ➤ 29.6 Combined techniques (6.3.2)	➤ Module 6 test – 54 marks of PEQ covering chapters 25 – 29 – completed in class under test conditions – links to exams 2 and 3 ➤ PAG 6 – Formation of organic compounds – practical activity, specific practical skills and analysis skills assessed
Easter Holiday			
Summer Term	<u>Revision</u>	➤ <u>Revision for final exams</u>	➤ Mock exam papers – paper 1, 2 and 3 – full exam papers from previous years – sat in exam conditions in class
	Half-term		
	<u>Exams</u>	<u>Exams</u>	<u>Exams</u>

Course Outline: Chemistry St John Fisher Year 12

Rationale: The first unit on the chemistry course is chemistry fundamentals (module 2), these are basic aspects of chemistry that build on knowledge from GCSE and underpin the concepts that will be studied throughout the rest of the course. Once the fundamentals are in place they are built upon by looking at the introduction of both inorganic chemistry/physical chemistry in module 3 and organic chemistry in module 4. Once these units have been completed then students have a good grounding in the three strands of chemistry and these are then built upon in module 5, further inorganic/physical chemistry and module 6 further organic chemistry. Module 3 and 4 rely on an understanding of the basic fundamentals of chemistry and these are revisited in all units throughout the course. Modules 5 and 6 cannot be accessed without the basic concepts covered in modules 3 and 4 and so are started at the end of year 12 and then continue into year 13. Module 1 is practical chemistry skills and this runs alongside the theory modules throughout the course with specific practical skills assessed for the practical endorsement at appropriate points.

	CONTENT	KEY/FUNDAMENTAL CONCEPTS	ASSESSMENT	
Autumn Term	<ul style="list-style-type: none"> ➤ Module 2 ➤ C2 Atoms, ions & compounds ➤ C3 Amount of substance ➤ C4 Acids & redox 	<ul style="list-style-type: none"> ➤ Module 2 ➤ 2.1 Atomic structure and isotopes (2.1.1) ➤ 2.2 Relative mass (2.1.1) ➤ 2.3 Formulae and equations (2.1.2) ➤ 3.1 Amount of substance and the mole (2.1.3) ➤ 3.2 Determination of formula (2.1.1/2.1.3) <ul style="list-style-type: none"> ○ PAG 1 ➤ 3.3 Moles and volumes (2.1.3) ➤ 3.4 Reacting quantities (2.1.3) ➤ 4.1 Acids, bases and neutralisation (2.1.4) ➤ 4.2 Acid – base titration (2.1.4/2.1.3) <ul style="list-style-type: none"> ○ PAG 2 ➤ 4.3 Redox (2.1.5) 	<ul style="list-style-type: none"> ➤ Chapter 3 and 4 test – 52 marks of PEQ on 3.1 – 4.3 – completed in class under test conditions – links to all exams ➤ PAG 1 – calculating empirical formula – practical activity, specific practical skills and analysis skills assessed ➤ PAG 2 – Acid – Base titration – practical activity, specific practical skills and analysis skills assessed 	
	Half-term			
	<ul style="list-style-type: none"> ➤ Module 2 ➤ C5 Electrons & bonding ➤ C6 Shapes of Molecules <ul style="list-style-type: none"> ➤ Module 3 ➤ C7 Periodicity ➤ C8 Reactivity trends ➤ C9 Enthalpy (part) 	<ul style="list-style-type: none"> ➤ Module 2 ➤ 5.1 Electron structure (2.2.1) ➤ 5.2 Ionic bonding and structure (2.2.2) ➤ 5.3 Covalent bonding (2.2.2) ➤ 6.1 Shapes of molecules and ions (2.2.2) ➤ 6.2 Electronegativity and polarity (2.2.2) ➤ 6.3 Intermolecular forces (2.2.2) ➤ 6.4 Hydrogen bonding (2.2.2) <ul style="list-style-type: none"> ➤ Module 3 ➤ 7.1 The periodic table (3.1.1) ➤ 7.2 Ionisation energies (3.1.1) ➤ 7.3 Periodic trends in bonding and structure (3.1.1) ➤ 8.1 Group 2 (3.1.2) ➤ 8.2 The halogens (3.1.3) ➤ 8.3 Qualitative analysis (3.1.4) <ul style="list-style-type: none"> ○ PAG 4 ➤ 9.1 Enthalpy changes (3.2.1) ➤ 9.2 Measuring enthalpy changes (3.2.1/2.1.3) 	<ul style="list-style-type: none"> ➤ Module 2 test – 54 marks of PEQ covering chapters 2 – 6 – completed in class under test conditions – links to all exams ➤ Weekly PEQ worth 10 – 20 marks <ul style="list-style-type: none"> ➤ PAG 4 – identifying ions and writing a method – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks 	
Christmas Holiday				

Spring Term	<ul style="list-style-type: none"> ➤ Module 3 ➤ C9 Enthalpy ➤ C10 Reaction rates & equilibrium 	<ul style="list-style-type: none"> ➤ Module 3 ➤ 9.2 Measuring enthalpy changes (3.2.1/2.1.3) <ul style="list-style-type: none"> ○ PAG 3 ➤ 9.3 Bond enthalpies (3.2.1) ➤ 9.4 Hess' law and enthalpy cycles (3.2.1) ➤ 10.1 Reaction rates (3.2.2/2.1.3) ➤ 10.2 Catalysts (3.2.2) ➤ 10.3 The Boltzmann distribution (3.2.2) ➤ 10.4 Dynamic equilibrium and le Chatelier's principle (3.2.3) ➤ 10.5 The equilibrium constant Kc – part 1 (3.2.3) 	<ul style="list-style-type: none"> ➤ Chapter 9 test – 52 marks of PEQ on 9.1 – 9.4 – completed in class under test conditions – links to exam 1 and 3 ➤ Module 3 test – 54 marks of PEQ covering chapters 7 – 10 – completed in class under test conditions – links to exams 1 and 3 ➤ PAG 3 – Enthalpy changes – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks
	<ul style="list-style-type: none"> ➤ Module 4 ➤ C11 Basic concepts of organic ➤ C12 Alkanes ➤ C13 Alkenes 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 11.1 Organic chemistry (4.1.1) ➤ 11.2 Nomenclature of organic compounds (4.1.1) ➤ 11.3 Representing the formula of organic compounds (4.1.1) ➤ 11.4 Isomerism (4.1.1) ➤ 11.5 Introduction to reaction mechanisms (4.1.1) ➤ 12.1 Properties of the alkanes (4.1.2) ➤ 12.2 Chemical reaction of the alkanes (4.1.2) ➤ 13.1 The properties of the alkenes (4.1.3) ➤ 13.2 Stereoisomerism (4.1.3) 	
	Half-term		
	<ul style="list-style-type: none"> ➤ Module 4 ➤ C13 Alkenes ➤ C14 Alcohols ➤ C15 Haloalkanes ➤ C16 Organic synthesis ➤ C17 Spectroscopy 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 13.3 Reaction of alkenes (4.1.3) ➤ 13.4 Electrophilic addition in alkenes (4.1.3) ➤ 13.5 Polymerisation in alkenes (4.1.3) ➤ 14.1 Properties of alcohols (4.2.1) ➤ 14.2 Reaction of alcohols (4.2.1) ➤ 15.1 The chemistry of the haloalkanes (4.2.2) ➤ 15.2 Organohalogen compounds in the environment (4.2.2) ➤ 16.1 Practical techniques in organic chemistry (4.2.3) <ul style="list-style-type: none"> ○ PAG 5 ➤ 16.2 Synthetic routes (4.2.3) ➤ 17.1 Mass spectrometry (4.2.4) ➤ 17.2 Infrared spectroscopy (4.2.4) 	<ul style="list-style-type: none"> ➤ Chapter 11 - 14 test – 52 marks of PEQ on 11.1. – 14.2 – completed in class under test conditions – links to exam 2 and 3 ➤ PAG 5 – Reflux and oxidation of alcohols – practical activity using quick fit apparatus, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks
Easter Holiday			

Summer Term	<ul style="list-style-type: none"> ➤ Module 4 ➤ C17 Spectroscopy ➤ Revision for mock exam ➤ Module 5 ➤ C18 Rates of reaction 	<ul style="list-style-type: none"> ➤ Module 4 ➤ 17.1 Mass spectrometry (4.2.4) ➤ 17.2 Infrared spectroscopy (4.2.4) ➤ Revision of modules 2 – 4 content and module 1 practical activities in preparations for the mock exam (see above for detailed content) ➤ Module 5 ➤ 18.1 Orders, rate equations, and rate constants (5.1.1) ➤ 18.2 Concentration – time graphs (5.1.1) ➤ 18.3 Rate – concentration graphs and initial rates (5.1.1) 	<ul style="list-style-type: none"> ➤ Weekly PEQ worth 10 – 20 marks ➤ Mock Exam – PEQ worth 70 marks covering material from module 1 – 4 – in exam conditions in Constance Green
	Half-term		
	<ul style="list-style-type: none"> ➤ Module 5 ➤ C18 Rates of reaction ➤ C19 Equilibrium ➤ C20 Acids, bases & pH 	<ul style="list-style-type: none"> ➤ Module 5 ➤ 18.3 Rate – concentration graphs and initial rates (5.1.1) <ul style="list-style-type: none"> ○ PAG 9 ○ PAG 10 ➤ 18.4 Rate-determining step (5.1.1) ➤ 18.5 Rate constants and temperature (5.1.1) ➤ 19.1 The equilibrium constant K_c – part 2 (5.1.2) ➤ 19.2 The equilibrium constant K_p (5.1.2) ➤ 19.3 Controlling the position of equilibrium (5.1.2) ➤ 20.1 Brønsted – Lowry acids and bases (5.1.3) ➤ 20.2 The pH scale and strong acids (5.1.3) ➤ 20.3 The acid dissociation constant K_a (5.1.3) ➤ 20.4 The pH of weak acids (5.1.3) ➤ 20.5 pH and strong bases (5.1.3) 	<ul style="list-style-type: none"> ➤ Chapter 18 – 19 test – 52 marks of PEQ on 18.1 – 19.3 – completed in class under test conditions – links to exam 1 and 3 ➤ PAG 9 – Rate of reaction – practical activity, specific practical skills and analysis skills assessed ➤ PAG 10 – Rate of reactions, including drawing computer graphs – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks

Notes:

PEQ = Past Exam Questions

In the key/fundamental concepts column the number in the bracket *i.e.*(2.1.1) refer to the specification statements



Course Outline:

Chemistry

Year 13

	CONTENT	KEY/FUNDAMENTAL CONCEPTS	ASSESSMENT
Autumn Term	Module 5 <ul style="list-style-type: none">➤ C21 Buffers & neutralisation➤ C22 Enthalpy & entropy➤ C23 Redox & electrode potentials	Module 5 <ul style="list-style-type: none">➤ 21.1 Buffer solutions (5.1.3)➤ 21.2 Buffer solutions in the body (5.1.3)➤ 21.3 Neutralisation (5.1.3)<ul style="list-style-type: none">○ PAG 11➤ 22.1 Lattice Enthalpy (5.2.1)➤ 22.2 Enthalpy changes in solution (5.2.1)➤ 22.3 Factors affecting lattice enthalpy and hydration (5.2.1)➤ 22.4 Entropy (5.2.2)➤ 22.5 Free energy (5.2.2)➤ 23.1 Redox reactions (5.2.3)➤ 23.2 Manganate(VII) redox titrations (5.2.3)➤ 23.3 Iodine/thiosulfate redox titrations<ul style="list-style-type: none">○ Practical activities: redox titrations	<ul style="list-style-type: none">➤ Chapter 20 – 21 test – 52 marks of PEQ on 20.1 – 21.3 – completed in class under test conditions – links to exam 1 and 3➤ PAG 11 – buffers or pH curves – practical activity, specific practical skills and analysis skills assessed➤ Practical activities – redox titrations, including iron - manganate titrations and bleach titrations – practical activity, specific practical skills and analysis skills practiced➤ Weekly PEQ worth 10 – 20 marks
	Half-term		
	Module 5 <ul style="list-style-type: none">➤ C23 Redox & electrode potentials➤ C24 Transition elements	Module 5 <ul style="list-style-type: none">➤ 23.4 Electrode potentials (5.2.3)<ul style="list-style-type: none">○ PAG 8➤ 23.5 Predictions from electrode potentials (5.2.3)➤ 23.6 Storage and fuel cells (5.2.3)➤ 24.1 d-block elements (5.3.1)➤ 24.2 The formation and shapes of complex ions (5.3.1)➤ 24.3 Stereoisomerism in complex ions (5.3.1)➤ 24.4 Ligand substitution and precipitation (5.3.1)➤ 24.5 Redox and qualitative analysis (5.3.1)	<ul style="list-style-type: none">➤ Module 4 test – 54 marks of PEQ covering chapters 11 – 17 – completed in class under test conditions – links to exams 2 and 3➤ Mock Exam – PEQ worth 100 marks covering material from module 1 – 5 – in exam conditions in Constance Green➤ PAG 8 – Electrochemical cells – practical activity, specific practical skills and analysis skills assessed➤ Weekly PEQ worth 10 – 20 marks
	Module 6 <ul style="list-style-type: none">➤ C25 Aromatic chemistry	Module 6 <ul style="list-style-type: none">➤ 25.1 Introducing benzene (6.1.1)➤ 25.2 Electrophilic substitution reactions of benzene (6.1.1)➤ 25.3 The chemistry of phenol (6.1.1)	
Christmas Holiday			

	<p>Module 6</p> <ul style="list-style-type: none"> ➤ C25 Aromatic chemistry ➤ C26 Carbonyls & carboxylic acids ➤ C27 Amines, amino acids & proteins ➤ C28 Organic synthesis 	<p>Module 6</p> <ul style="list-style-type: none"> ➤ 25.4 Directing groups (6.1.1) ➤ 26.1 Carbonyl compounds (6.1.2) ➤ 26.2 Identifying aldehydes and ketones (6.1.2) ➤ 26.3 Carboxylic acids (6.1.3) ➤ 26.4 Carboxylic acid derivatives (6.1.3) <ul style="list-style-type: none"> ○ PAG 7 ➤ 27.1 Amines (6.2.1) ➤ 27.2 Amino acids, amides and chirality (6.2.2) ➤ 27.3 Condensation polymers (6.2.3) ➤ 28.1 Carbon – carbon bond formation (6.2.4) ➤ 28.2 Further practical techniques (6.2.5) <ul style="list-style-type: none"> ○ PAG 6 	<ul style="list-style-type: none"> ➤ Module 5 test – 54 marks of PEQ covering chapters 18 – 24 – completed in class under test conditions – links to exams 1 and 3 ➤ PAG 7 – Formation of organic compounds – practical activity, specific practical skills and analysis skills assessed ➤ PAG 6 – Formation of organic compounds – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks
Half-term			
Spring Term	<p>Module 6</p> <ul style="list-style-type: none"> ➤ C28 Organic synthesis ➤ C29 Chromatography & spectroscopy 	<p>Module 6</p> <ul style="list-style-type: none"> ➤ 28.2 Further practical techniques (6.2.5) <ul style="list-style-type: none"> ○ PAG 6 ➤ 28.3 Further synthetic routes (6.2.5) ➤ 29.1 Chromatography and functional group analysis (6.3.1) ➤ 29.2 Nuclear Magnetic Resonance (NMR) spectroscopy (6.3.2) ➤ 29.3 Carbon-13 NMR spectroscopy (6.3.2) ➤ 29.4 Proton NMR spectroscopy (6.3.2) ➤ 29.5 Interpreting NMR spectra (6.3.2) ➤ 29.6 Combined techniques (6.3.2) <p>Final PAG</p> <ul style="list-style-type: none"> ➤ <i>PAG 12 – Research skills – research a reaction, write a method, write a risk assessment and then complete the practical activity and process the results</i> 	<ul style="list-style-type: none"> ➤ Module 6 test – 54 marks of PEQ covering chapters 25 – 29 – completed in class under test conditions – links to exams 2 and 3 ➤ PAG 6 – Formation of organic compounds – practical activity, specific practical skills and analysis skills assessed ➤ PAG 12 – Research skills – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks
Easter Holiday			

Summer Term	<p>Module 6</p> <ul style="list-style-type: none"> ➤ C29 Chromatography & spectroscopy <p>Final PAG</p> <p><u>Revision</u></p>	<p>Module 6</p> <ul style="list-style-type: none"> ➤ 29.6 Combined techniques (6.3.2) <p>Final PAG</p> <ul style="list-style-type: none"> ➤ <i>PAG 12 – Research skills – research a reaction, write a method, write a risk assessment and then complete the practical activity and process the results</i> ➤ <u>Revision for final exams</u> 	<ul style="list-style-type: none"> ➤ Module 6 test – 54 marks of PEQ covering chapters 25 – 29 – completed in class under test conditions – links to exams 2 and 3 ➤ Mock exam papers – paper 1, 2 and 3 – full exam papers from previous years – sat in exam conditions in class ➤ PAG 12 – Research skills – practical activity, specific practical skills and analysis skills assessed ➤ Weekly PEQ worth 10 – 20 marks
	Half-term		
	<u>Exams</u>	<u>Exams</u>	<u>Exams</u>