

CHEMISTRY CURRICULUM MAP

A. FORMAL KEY STAGE FIVE CHEMISTRY ADVANCED LEVEL CURRICULUM

Core Threads	By the end of key stage FIVE we want all students of Chemistry to know and do the following key things: Confident knowledge, understanding, and application of core Chemistry terms and concepts; depth of description; high competency for practical skills; analysis and manipulation of qualitative & quantitative data with reasoning; coherent conclusions; well-reasoned judgements; evaluate & refine practical procedure independently.
Prior Knowledge	In KS5, students of Chemistry will build on the following prior learning : GCSE knowledge and understanding of topics such as Organic Chemistry, mole calculations, rates of reactions and chemical analysis; build on experience of practical procedures; justification of processes and variables; GCSE mathematical skills, including evaluation of data; offer extended responses, justified conclusion, and explanations of trends; key apparatus and techniques; appreciation of laboratory safety and safe use of chemicals.
Future Knowledge	The Curriculum in KS5 Chemistry will prepare students for the following future learning : Undergraduate study in areas such as Medicine, Biomedical Sciences, Chemical Engineering, Biochemistry, Dentistry and Pharmacy; understanding beyond specification; appreciation of wider reading and linked theory; independent research skills; independent practical investigation; collection and manipulation of quantitative data.

Year 12	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Understanding and application relating to amount of substance , acids, atomic structure and bonding. Complete Practical Activity Group One: Mole Determination – exploring Relative Atomic Mass. Chemical Analyst .	Amounts of Substance Test, Basic Structure & Electrons Test
Year 12	T2	Understanding and application of titrations , alkanes, basic concepts, periodicity, Groups 2 and 7. Analysing trends with explanations, practical skills; and quantitative data manipulation. Complete Practical Activity Group Four: Qualitative analysis and Group Two: Titrations.	Acids and Titrations Test, Bonding & Structure Test
	T3	Understanding and application of alkenes, polymers , enthalpy changes and Hess's law. Manipulation of data for enthalpy changes and practical work on calorimetry. Analytical Technician – Plastics, Product developer .	Alkanes and Basic Concepts Test, Periodicity, Group 2 and 7 Test, Alkenes and Polymers Test
	T4	Understanding and application of rates , equilibria , and alcohols. Consolidation of prior knowledge in preparation for interim examination. Calculations involving rates and equilibrium. Complete Practical Activity Groups: Five and Seven – Oxidation of Alcohols. Complete Practical Activity Group Seven: Comparing the rates of hydrolysis of haloalkanes and Practical Activity Group Five: synthesis of a haloalkane.	Alcohols and Haloalkanes Test, Energy Test
	T5	Understanding and application of core knowledge relating carbonyls, carboxylic acids, esters, and spectroscopy . Complete Practical Activities Group Six and Twelve: research and making of aspirin and Seven: Chemical tests. Analytical Chemist. Toxicologist .	Rates, Equilibria and Analysis Test
	T6	Understanding and application of aromatic and nitrogen compounds and their derivatives. Knowledge of chemical reactions and conditions including mechanisms. Practise of prior learning through consolidation exercises and booklets in preparation for interim mock examinations.	Carbonyls and Carboxylic acids Test, Aromatic Compounds Test, Interim Mock Examinations
Year 13	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Understanding and application of polymers , synthesis , and analytical techniques . Problem solving , interpretation of data and application to unfamiliar scenarios . Complete Practical Activity Group Seven: identifying Organic unknowns. Pharmaceuticals, Chemical Engineering .	Nitrogen Compounds and Polymers test, Analytical Techniques Test
	T2	Understanding and application of equilibria and kinetics . Calculations for equilibria and kinetics. Complete Practical Activity Groups Nine and Ten: Kinetics. Data handling, analysis, evaluation, and manipulation. Understanding and application of acids and bases.	Equilibria and Organic synthesis test, Chemical Kinetics Test
	T3	Understanding and application of buffers , titration curves, energy, and entropy. Calculations involved with acids, bases, and buffers. Complete Practical Activity Group One: Titration curves. Practise of prior learning through consolidation exercises and booklets.	Year 13 Mock Examination Paper 1 and Paper 2 Energetics test, Acids, Bases, and Buffers Test
	T4	Understanding and application of transition metals, and redox potentials . Calculations and practical work involving electrode potentials and redox titrations. Research Chemist – New Energy Solutions .	Transition Metals Test & Redox Potentials Tests
Year 13	T5	Consolidation of prior learning and application to unfamiliar scenarios in preparation for external exams through use of past paper questions.	Unified Chemistry paper 3 mock External Examinations

B. WIDER KEY STAGE FIVE CHEMISTRY CURRICULUM

- Participation in the Chemistry Olympiad.
- Independent progress through wider reading, including Chemistry reviews.
- External events, such as **The Royal Society of Chemistry Analytical Scientist Competition**, to extend learning beyond the formal curriculum.

CHEMISTRY CURRICULUM MAP

A. FORMAL KEY STAGE FOUR CHEMISTRY GCSE LEVEL CURRICULUM

Core Threads	By the end of key stage FOUR we want all students of Chemistry to know and do the following key things Confident knowledge & understanding of key terms and concepts in Chemistry; application to scenarios; competent description; thorough practical skills; ability to analyse qualitative & quantitative data with reasoning; manipulation of data; coherent conclusions; well-reasoned judgements; evaluate practical procedure with growing independence, link key concepts.
Prior Knowledge	In KS4, students of Chemistry will build on the following prior learning : KS3 knowledge and understanding, ability to think scientifically, appreciation of key practical methods; awareness of variables; KS3 mathematical skills, awareness of the purpose of evaluation; justified conclusion; analysis of data with description of trends; key apparatus and techniques; appreciation of lab safety and safe use of chemicals.
Future Knowledge	The Curriculum in KS4 Chemistry will prepare students for the following future learning : Confident knowledge & GCSE understanding; application to wider scenarios, such as Chemistry in Industry and Chemistry of the Earth; depth of description; high competency for practical skills; analysis of qualitative & quantitative data with reasoning; manipulation of data; coherent conclusions; well-reasoned judgements; evaluate & refine practical procedure independently, link key concepts.

Year 10	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Understanding & application of Carbon Chemistry. Links from Geography/KS3 source of oil, building upon knowledge to link to uses.	Carbon Chemistry Test
	T2	Understanding and application of Acids and their reactions including practical skills to make salts and links to biology in terms of amino acids and DNA. Understanding of the pH scale and the strengths of acids.	Carbon Chemistry Test
	T3	Understanding and application of quantitative chemistry. Mathematics skills: unit conversions; rearranging equations. Applying quantitative analysis to examination questions. Links to quantitative use in industry; % yield/atom economy. Process Chemist.	Acids and their reactions and Cumulative knowledge Test
	T4	Understanding and application of quantitative chemistry. Required Practical: Acid-base Titration – developing practical skills unfamiliar equipment. Mathematics skills; unit conversions; rearranging equations. Applying quantitative analysis to questions.	Exam Style consolidation questions
	T5	Consolidation of prior learning in preparation for end of year examination. Modelling application of understanding to unfamiliar questions. Review and feedback of understanding through end of year exam analysis. Mathematics Skills, with a focus on manipulating data and rearranging data.	End of Year 10 Internal Mock Examination
	T6	Understanding and application of chemical reactions and their rates . Practical skills, graph skills, data handling, maths skills. Linking subject to careers . Application of theory to practical. Testing hypothesis. Understanding of variables. Industrial Chemist.	Rates of Reaction and Cumulative knowledge Test
Year 11	Term	KEY KNOWLEDGE SKILLS CONCEPTS – TAUGHT, REVISED, REVISITED, AND LEARNT	Common Assessment End Points
	T1	Understanding and application Energy & Equilibria. Importance in everyday life (Haber Process/Fuel Cells) . Maths Skills in energy calculations. Linking concepts; compromise between rate and yield. Required Practical: recording temperature changes. Mathematics: graphs skills. Process Chemist.	Exam Style consolidation questions
	T2	Consolidation of prior learning in preparation for mock examination. Modelling application of understanding to unfamiliar questions. Review and feedback of understanding through mock exam analysis. Understanding and application of Electrolysis . Links to use in everyday life, such as extracting metals from their ores . Required practical: Electrolysis. Process Development Chemist.	Internal Mock Examination
	T3	Consolidation on the Electrolysis topic. Understanding and application of the chemical tests. Required Practical: Linking chemical testing to potable water topic. Recall of prior learning (Chemical Formulae and Ions). Practical skills and analysis of unknowns – systematic identification. Analytical Pharmaceutical Research Chemist. Food Scientist.	
	T4	Completion of Chemical analysis and application of knowledge and understanding to consolidate learning.	Cumulative Knowledge Test
	T5	Consolidation of prior learning and application to exam questions in preparation for external exams through use of past paper questions.	External Examinations

B. WIDER KEY STAGE FOUR CHEMISTRY CURRICULUM

- **Careers Link:** investigating Chemistry in the Wider World, via STEM activities during careers week and links to the wider world during lessons.