

Year 11: Chemistry Separate Science

Curriculum Intent: Year 11 Separate Chemistry looks to build on the foundation established in the Separate Science course. The more complex topics covered include titrations and quantitative analysis, equilibrium and industrial processes, qualitative analysis including testing for ions and basic organic chemistry. The knowledge gained provides students with a deeper insight into the subject, allowing them to tackle more complex problems and questions which link different areas. It also builds a solid knowledge base for progression to A level chemistry. Practical skills include qualitative and quantitative analysis through ion testing and carrying out titrations and volumetric calculations.



	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1
Key ideas and Sequence of Learning	Module C5- monitoring & controlling reactions - Theoretical yield - Percentage yield - Atom economy - Making ethanol - Titration procedure - Titration calculations - Gas calculations Module C6 – Global Challenges - Haber process - Contact process - Producing electricity	Module C6 – Global Challenges - Fertilisers - Making fertilisers - Different materials Module 2- elements, compounds and materials - Nanoparticles	Revision and consolidation	Revision and consolidation Students begin their GCSE exams	Students finish their GCSE exams
Key Questions	- How do you calculate theoretical and % yield? - How do you calculate atom economy? - How must chemists consider yield and atom economy when designing processes? - Explain the two methods of producing ethanol – fermentation and hydration of ethene	- Why are fertilisers important and what chemicals make good fertilisers? - Explain the uses of nanoparticles	Students will review their PPE exam papers in detail to identify strengths and weaknesses Students will then prepare for their GCSE exams in lessons with their teacher. They will also have lectures for each module.	Students will prepare for their GCSE exams in lessons with their teacher.	

	5. Comparing the two methods of producing ethanol 6. How do you carry out a titration and record results? 7. How do you calculate an unknown concentration from titration results? 8. How do you use $V=24n$ to calculate moles and volumes of gas? 9. Describe a fuel cell and explain how it generates electricity 10. What is the Haber process? 11. Explain the optimum conditions for the Haber process 12. Describe the contact process for making sulfuric acid				
Vocabulary	• Yield • Theoretical • Actual • Atom economy • Titration • Concordant • Burette • Pipette • Titre • Equilibrium • Shift • Pressure • Concentration • Fermentation	• Nanoparticles			

	• Hydration • Catalyst • Contact Process • Haber Process • Fuel cell • Anode • Cathode • Redox • Reduction • Oxidation				
Practical Skills	• Fermentation and distillation of ethanol • Titration – finding unknown concentrations of solutions • Recording results and calculating suitable mean titres • Making salts, linking to C3 and to titration method	• Titration technique and crystallisation for making fertilizers • Making salts, linking to C3 and to titration method			