

Year 11 Chemistry – Outline Programme of Study

	Term 1	Term 2	Term 3	Term 4	Term 5
Big ideas/ topics	Chapter 6 – The rate and extent of chemical change. It covers the rate of reactions, reversible reactions and dynamic equilibrium.	Chapter 7 – Organic Chemistry. It covers carbon compounds as fuels and feedstock, reactions of alkenes and alcohols, and synthetic and naturally occurring polymers.	Chapter 8 – Chemical analysis. It covers purity, formulations, chromatography, identification of common gases and identification of ions by chemical and spectroscopic means.	Chapter 9 – Chemistry of the atmosphere. It covers the composition and evolution of the earth's atmosphere, carbon dioxide and methane as greenhouse gases, and common atmospheric pollutants and their sources.	Chapter 10 – Using the Earth's resources. It covers using the Earth's resources and obtaining potable water, life cycle assessment and recycling, using materials, the Haber process and the use of NPK fertilisers.
Key Knowledge	<ul style="list-style-type: none"> What is meant by collision theory. Describe and explain factors affecting the rate of a reaction. Required practical – Effect of concentration Calculating rates of reactions. Identifying reversible reactions and linking this to equilibrium. Describe and explain changing concentration, pressure, temperature and addition of a catalyst on the position of equilibrium. 	<ul style="list-style-type: none"> How crude oil is formed. Naming and drawing the first 4 alkanes. Properties of alkanes. Describe and explain the process of fractional distillation. Describe and explain the process of cracking. Describe how to test for alkenes. (Chemistry only) Naming and drawing the first 4 alkenes. Describe reactions of alkenes with halogens, hydrogen, steam and oxygen. Naming and drawing the first 4 alcohols. Reactions of alcohols including combustion, oxidation, reaction with carboxylic acids, reaction with sodium and reaction with water. Naming and drawing the first 4 carboxylic acids. Reactions of carboxylic acids with carbonates and alcohols. Describe esterification and naming ethyl ethanoate. Drawing addition and condensation polymers. Describe and explain the structure of DNA. 	<ul style="list-style-type: none"> Define what is meant by a pure substance. Describing what is meant by formulations. Describe and explain how chromatography works. Required practical – Chromatography Can carry out tests to determine positive metal ions using flame tests and addition of sodium hydroxide. Can carry out tests to determine negative ions including carbonate, sulfate and halide tests. Required practical – Use of chemical tests to identify ions in unknown single ionic compounds. State advantages and disadvantages of using instrumental analysis. 	<ul style="list-style-type: none"> Describe and explain the evolution of the Earth's atmosphere. Describe and explain the greenhouse effect. Describe and explain global warming and climate change. Identify what we can do to help reduce global warming and climate change. Describe and explain what is meant by carbon footprint. Identify ways we can help to reduce our carbon footprint. Identify different atmospheric pollutants; explain how they are formed and what problems they cause. 	<ul style="list-style-type: none"> Defining what is meant by sustainable development. Describing ways we can reduce the use of resources (reuse, recycle) Describe the different stages of a life cycle assessment Construct life cycle assessments for different items/events. Defining what is meant by potable water. Describe and explain the processes involved during water treatment. Required practical – Analysis and purification of water samples Describe and explain alternative methods of metal extraction (bioleaching and phytomining) (Chemistry only) Describe and explain conditions needed for rusting. Link properties of thermosetting and thermosoftening polymers to their structure. Describe what a composite is and give examples. Describe and explain the Haber process and link to equilibrium and changing conditions.



Further information and reading list

- AQA [Trilogy](#) (8464) or AQA [Chemistry](#) (8462) specifications.
- [CGP AQA Trilogy \(8464\)](#) or [CGP AQA Chemistry \(8462\)](#) revision guides
- [CGP AQA Trilogy \(8464\)](#) or [AQA Chemistry \(8462\)](#) flashcards
- [Educake](#)
- [Focus elearning](#)
- <https://www.bbc.co.uk/bitesize/examspecs/z8xtmn> BBC bitesize
- [Physics maths tutor](#)
- [Savemyexams](#)
- [Freesciencelessons.co.uk](#)
- [Malmesbury Science](#)
- [Biology](#) / [Chemistry](#) / [physics](#) textbooks
- [AQA Command words](#)
- [Subject specific vocabulary](#)

Ways to support and extend student learning in this subject

- All lesson resources available on google classroom
- Use educake to reinforce key knowledge
- Pearsons target grade books. [Trilogy](#) [Chemistry](#)
- New scientist
- [Trilogy past papers](#)
- [Chemistry past papers](#)
- Youtube sites
- Christmas lectures