



# Queen Elizabeth's Girls' School

*Educating Women of the Future*

## Chemistry Key Stage 4 Curriculum

	Topic/Big Question	Focus
Year 10	<b>Earth systems interact</b>	<b>The Earth's Atmosphere</b> - Students will learn the history and evolving nature of our atmosphere and how the climate is changing and the effect of atmospheric pollutants on our lives.
	<b>Structure determines properties</b>	<b>Structure and bonding</b> - Students will learn how atoms bond together to make compounds, including ionic, covalent and metallic structures. They will learn what makes up fullerene and graphene and what nanoparticles are and some applications of them
	<b>Reactions rearrange matter</b>	<b>Chemical Calculations</b> - Students will learn how to calculate relative formula mass and what a mole is and how to use it for calculations. They will look at what is meant by atom economy and how to calculate titrations, volumes of gases and how to express concentrations in chemistry.
	<b>Reactions rearrange matter</b>	<b>Electrolysis</b> - Students will learn how the process of electrolysis works both in molten and solutions and how aluminium is extracted by this method.
	<b>Reactions rearrange matter</b>	<b>Energy Changes</b> - Students will learn about endothermic and exothermic reactions, what a reaction profile is, how to calculate bond energies and about chemical and fuel cells.
	<b>Reactions rearrange matter</b>	<b>Rate of Reactions</b> - Students will learn how temperature, concentration and catalysts affect the rate of a chemical reaction and what is meant by reversible reactions and dynamic equilibrium.

	Topic/Big Question	Focus
Year 11	<b>Reactions rearrange matter</b>	<b>Rate of Reactions</b> - Students will learn how temperature, concentration and catalysts affect the rate of a chemical reaction and what is meant by reversible reactions and dynamic equilibrium.
	<b>Structure determines properties</b>	<b>Crude Oil and Fuels</b> - Students will learn about hydrocarbons and how they are extracted from oil by fractional distillation.
	<b>Structure determines properties</b>	<b>Organic Reactions</b> - Students will learn about the structure and reactions of alkenes, alcohols, carboxylic acids and esters.
	<b>Reactions rearrange matter</b>	<b>Polymers</b> - Students will learn what polymers are and how they are made by addition and condensation reactions.
	<b>Reactions rearrange matter</b>	<b>Chemical Analysis</b> - Students will learn about what is meant by a pure substance, what the principle of chromatography is and how to test for gases, positive and negative ions.
	<b>Earth systems interact</b>	<b>The Earth's resources</b> - Students will learn about finite and renewable resources, how we get water that is safe to drink, how we treat wastewater, how we extract metals from ores and what a life cycle assessment is.
	<b>Earth systems interact</b>	<b>Using Our Resources</b> - Students will learn about rusting, useful alloys, the properties of polymers, Glass, ceramics and composites. They will also learn about the Haber process used to make ammonia and the economics of this process. They will also learn how fertilisers are made in the lab and in industry.