Year 11 Science Overview

Unit	Learning Objectives/Outcomes
Evolution	• Describe evolution • Natural selection • Variation • Speciation (Biology only) • Selective breeding • Genetic engineering • Cloning (Biology only) • Theory of evolution (Biology only) • Understanding of genetics (Biology only) • Evidence for evolution • Fossils • Extinction • Resistant bacteria • Classification of living organisms
Ecology	• Adaptations / interdependence / competition • Communities • Abiotic factors • Biotic factors • Adaptations • Organisms in an ecosystem • Carbon cycle • Decomposition (Biology only) • Impact of environmental change (Biology only) • Biodiversity • Waste management • Land use • Deforestation • Global warming • Maintaining biodiversity • Food production / farming / sustainability
Chemical analysis	• Pure substances • Chromatography • Identification of common gases • Flame tests • Metal hydroxides / carbonates / halides / sulfates • Instrumental methods
Chemistry of the atmosphere	• Gases in the atmosphere • The earths early atmosphere • Changes in the earth's atmosphere • Greenhouse gases • Human impact on the environment / atmosphere • Climate change • Carbon footprint

	• Atmospheric pollutants from fuels
Using resources	• Earth's resources • Water / water treatment • Extracting metals • Recycling • Haber process • Production and uses of NPK fertilisers
Waves	• Transverse and longitudinal waves • Wave diagrams • Calculating wave frequency • Wave speed • Measuring speed of waves • Reflection of waves and ray diagrams (Physics) • Sound waves (Physics) • Hearing • Ultrasound and uses (Physics) • Electromagnetic waves and spectrum • Refraction • Properties of EM waves • Uses of EM waves • Lenses (Physics) • Convex and concave lenses (Physics) • Lenses and ray diagrams (Physics) • Magnification (Physics) • Colours and filters • Emission and absorption of infrared radiation • Radiation and temperature
Magnets and electromagnets	• Poles of a magnets • Magnetic fields • Electromagnets • Flemings left hand rule (HT) • Electric motors (HT) • Loudspeaker (HT) • Induced potential (HT) • Uses of generator effect (HT) • Microphones (HT) • Transformers (HT)
Space physics	• Solar system • Life cycle of a star • Natural and artificial satellites • Red shift