

## Triple Science Exclusive Content: Spring Term 2025

Students who take triple science will need to study the combined manifest as well as the contents of this manifest.

Biology Topic 5: Homeostasis and Response	R	А	G
The eye: accommodation to focus on nearby and distant objects			
The eye: adaptation to dim light			
Structure of the eye			
Myopia and hyperopia and how glasses correct vision: including ray diagrams			
Control of body temperature			
Control of water loss by the body			
How the body processes excess amino acids (HT only)			
Function of the kidneys in filtering blood			
Production and effect of ADH on permeability of kidney tubes			
Detecting and treating kidney failure: dialysis and transplant.			
Plant hormones: phototropism and gravitropism/geotropism controlled by auxins			
Plant hormones: uses functions of gibberellins, ethene, auxins (HT only)			
Required practical 8: effect of light and gravity on the growth of newly germinated seedlings.			

Biology Topic 6: Inheritance, variation & evolution	R	А	G
DNA structure and nucleotide bases			
Protein synthesis			
Mutations and the effect on the phenotype			
Cloning: tissue culture, cuttings, embryo transplants, adult cell cloning.			
Darwin and Lamarck's theories of evolution			
Speciation and the work of Darwin and Wallace			
Work of Mendel and his breeding experiments with peas.			

Biology Topic 7: Ecology	R	А	G
Decomposition			
Impact of environmental change on distribution of species (HT only)			
Trophic levels			
Pyramids of biomass			
Transfer of biomass			
Factors affecting food security			
Farming techniques: improving efficiency			
Sustainable fishing			
Role of biotechnology			
Required practical 10: effect of temperature on the rate of decay of fresh milk by measuring pH			

Chemistry Topic 6: Rate and Extent of Reactions	R	А	G
There is no exclusive content for this topic.			

Chemistry Topic 7: Organic Chemistry	R	А	G
Structure and formulae of alkenes, alcohols, carboxylic acids, ethyl ethanoate up to and including 4			
carbons.			
Reactions of alkenes: combustion, hydrogenation, water, halogenation.			
Reactions of alcohols: combustion, sodium, water, oxidation, carboxylic acids.			
Formation of alcohols: fermentation of sugar with yeast.			
Reactions of carboxylic acids: carbonates, in water, with alcohols.			
Addition polymerisation of alkenes			
Condensation polymers of diols and dicarboxylic acids, amino acids to form proteins.			
Structure of DNA (including nucleotides), proteins, starch, and cellulose			

Chemistry Topic 8: Chemical Analysis	R	А	G
Flame tests of: lithium, sodium, potassium, calcium, copper.			
Using sodium hydroxide to identify: aluminium, calcium, magnesium, copper (II), iron (II), iron (III)			
ions.			
Identyfing carbonate, sulfate, and halide ions/			
Instrumental methods and their advantages.			
Flame emission spectroscopy: how it works and interpreting data.			

Chemistry Topic 9: Atmosphere	R	А	G
There is no exclusive content for this unit.			

Chemistry Topic 10: Using resources	R	А	G
Cause of corrosion, rust of iron as an example.			
Preventing rusting and corrosion including sacrificial protection.			
Alloys and their uses: bronze, brass, gold alloys, steels, aluminium alloys			
Ceramics: glass and clay ceramics – how they are made and their useful properties.			
Polymers: how low and high density poly(ethene) are produced from ethene			
Polymers: difference in structure of thermosoft and thermoset polymers.			
Composites: what they are.			
The Haber process (also see dynamic equilibrium), and the reasons for optimum conditions.			
Production and use of NPK fertilisers			

Physics Topic 5: Forces	R	А	G
Moment as the product of distance from pivot and force applied.			
How gears and levers transfer rotational effects.			
Pressure in fluids: pressure at surface and at different heights.			
Floating and sinking in terms of pressure.			
Atmospheric pressure: in terms of particles.			
Calculating changes in momentum			

Physics Topic 6: Waves	R	А	G
Reflection & refraction of waves.			
Sound waves and range of human hearing.			
Waves for detection and exploration: ultrasound, seismic waves, echo sounding			
Lenses: what lenses do to light rays and ray diagrams.			
Drawing ray diagrams for convex (converging) and concave (diverging)			
Colours of light: reflection and absorption to see colour, viewing objects through filters,			
Black body radiation: emission and absorption			
Black body radiation: perfect black bodies and radiation			
Required practical 9: investigate the reflection of light by different types of surface and the			
refraction of light by different substances.			

Physics Topic 7: Magnetism and Electromagnetism	R	А	G
Loudspeakers: how do moving-coil loudspeakers and headphones work. (HT only)			
Induced potential: factors that affect direction of induced potential.			
Generator effect: how currents are generated in dynamos and generators			
Microphones: explain how a moving coil microphone works.			
Transformers: how currents are induced by one coil into another.			
Transformers: how ratio of potential difference depends on the number of turns on the coil.			

Physics Topic 8: Space Physics	R	А	G
Our solar system: planets, satellites.			
Life cycle of a star			
Nuclear fusion in stars			
Orbital motion caused by gravity			
Red shift: what it is and how it gives evidence for the expanding universe.			
The Big Bang theory			
Dark matter and dark energy			

## Other useful revision resources:

https://cognitoedu.org/home - revision videos and access to past papers and exam questions with mark schemes. Follow the list of topics above.

https://sparxscience.com/ - access revision quizzes for any part of the specification

https://www.bbc.co.uk/bitesize/examspecs/z8r997h - BBC Bitesize – AQA Combined Science

https://filestore.aqa.org.uk/resources/science/specifications/AQA-8464-SP-2016.PDF - AQA Combined Science GCSE Specification. Read chapters 4, 5 and 6 for exam specific content.