

Year 10 Combined Science (double award)

Energy changes

- Exothermic and endothermic reactions
- Uses of exothermic and endothermic reactions
- Energy reaction profile diagrams for exothermic and endothermic reactions
- Bond energy calculations

Chemical analysis

- Pure substances and mixtures
- Analysing chromatography
- Testing for gases

Earth's resources

- Finite and renewable resources
- Making water safe to drink
- Extracting metals from ores
- Life cycle assessments
- Reduce, recycle and reusing materials such as plastic and metals

Organisation

- Human digestive system.
- Chemistry of food.
- Enzymes and factors affecting enzyme action.
- Blood and function of the heart.
- Breathing and gas exchange.
- Transport systems in plants.

Infection and response

- Disease and pathogens.
- Plant disease and defence response.
- Human defence responses.
- Vaccination and the use of antibiotics.
- Discovering and developing new drugs.
- Smoking and its effects.
- Diet, exercise and health.
- Cancer.
- Non communicable diseases.



Rates of reaction

- Measuring rates of reaction
- Collision theory
- Factors affecting the rate of chemical reactions
- Uses and the effects of catalyst
- Reversible reactions and dynamic equilibria

Photosynthesis and respiration

- The importance of photosynthesis
- Factors affecting the rate of photosynthesis
- Commercial aspects of controlling photosynthesis
- Aerobic and anaerobic respiration
- Metabolism and liver function

Nervous system and hormones

- Structure and function of the nervous system
- Reflex actions
- Principles of hormonal control
- The control of blood sugar levels
- Human reproduction
- Menstrual cycle and the control of fertility

Radioactivity and atomic structure

- Discovery of the nucleus
- Types of radiation – alpha, beta and gamma
- Changes to the nucleus as a result of emission
- Activity and half life

Forces in balance

- Vectors and scalars
- Resultant forces
- Centre of mass
- Parallelogram of forces
- Resolution of forces

Force and motion

- Speed, distance and time
- Velocity and acceleration
- Motion graphs
- Force and acceleration
- Weight and terminal velocity
- Momentum
- Force and elasticity
- Forces and braking

Chemical changes

- Reactivity series and extracting metals.
- Making salts from metals and bases
- Neutralisation and the PH scale.
- Strong and weak acids.

Electrolysis

- Theory of electrolysis including key words and terms
- Electrolysis of solutions
- The extraction of aluminium
- Electrolysis of brine

Bioenergetics

- Photosynthesis.
- Aerobic and anaerobic respiration.
- Metabolism and the liver.

Homeostasis

- Structure and function of the nervous system
- Controlling blood sugar and treating diabetes
- Human reproduction and the role of hormones
- The menstrual cycle
- Controlling fertility and infertility treatments

Inheritance and variation

- Types of reproduction.
- Cell division.
- Evolution by natural selection.
- Selective breeding and genetic engineering
- Evidence for evolution
- Fossils and extinction
- Classification

Electromagnetism

- Magnetic fields.
- Magnetic fields of electric currents
- Motor effect.

**Advice to students
for independent
study**

- Students can access Sam Learning and BBC Bitesize to support learning and revision. They could also consider purchasing revision books from the following site:
https://www.cgpbooks.co.uk/Student/books_ks4_science
- Students should read about Science in everyday life; newspapers often have interesting stories.