

Biology



1. Cell biology

Microscope and Magnification 1
Microscope and Magnification 2
Chromosomes and Mitosis
Stem Cells
Diffusion
Osmosis
Active Transport

2. Organisation

An Introduction to Enzymes
Enzymes in the digestive system
Cardiovascular disease
Transpiration in plants
Organisation in plants

3. Infection and response

Viral, bacterial, fungal and protist diseases
Immunity and vaccination
Fighting diseases with drugs

4. Bioenergetics

The rate of photosynthesis - Limiting Factors
Investigating the rate of photosynthesis
Respiration and metabolism
The effect of exercise on the body

5. Homeostasis and response

Adrenalin and Thyroxine
Controlling blood glucose

6. Inheritance, variation and evolution

Inherited disorders - Polydactyly
Inherited disorders - Cystic Fibrosis
Screening for genetic disorders
Selective breeding
Genetic engineering
Evidence of evolution and extinction
Classification and evolutionary trees

7. Ecology

Communities and interdependence
Cycling in ecosystems
Rates of decomposition
Measuring the Distribution of Organisms

Chemistry



1. Atomic structure

Scientific models of the atom
Atomic structure
Relative atomic mass
Electronic structure
Group 0 - Noble Gases
Group 1 - Alkali Metals
Group 7 - Halogens

2. Bonding

Covalent bonding
Metallic bonding
Graphene and fullerenes

3. Quantitative Chemistry

Relative formula mass
Mass changes
The mole
Reacting masses
Concentration in gdm³

4. Chemical Changes

The reactivity of metals
Displacement reactions
The pH scale and neutralisation
Strong and weak acids
Electrolysis (molten)
Using electrolysis to extract metals
Electrolysis (aqueous)

5. Energy Changes

Reaction profile diagrams
Calculating energy changes

6. Rate and extent of chemical change

Measuring rates of reaction
Interpreting rate graphs
Collision theory and activation energy
Reversible reactions and equilibrium
Factors affecting equilibrium

7. Organic Chemistry

Combustion of hydrocarbons
Cracking and alkenes

8. Chemical Analysis

Purity and formulations
Gas tests

9. Chemistry of the atmosphere

The greenhouse effect and global warming
Atmospheric pollutants

10. Using Resources

Sustainable development
Alternative methods of extracting metals

Physics



1. Energy

Power
Conservation and dissipation of energy

2. Electricity

Resistors
Series and Parallel Circuits
Power and energy transfers
The National Grid

3. Particle model of matter

Specific heat capacity and specific latent heat
Particle model and pressure

4. Atomic structure

Atoms and isotopes
The development of the model of the atom
Half-lives and the random nature of radioactive decay
Radioactive contamination

5. Forces

Scalars and vectors Gravity
Resultant forces
Forces and elasticity
Distance-time graphs
Acceleration
Velocity-time graphs
Falling objects
Newton's laws of motion
Momentum 1

6. Waves

[No additional videos]

7. Magnetism and electromagnetism

[No additional videos]

8. Space Physics

[None]