



# Sandbach School Science Curriculum:

## Year 9 Science Curriculum Sequence

**Intent:** To build on prior knowledge from the transition & induction phase: Students will revisit these 10 key topics of forces, electromagnetism, energy, waves, matter, reactions, earth, organisms in different context. In addition students will apply their understanding of the scientific method in practical investigations.

**HT1**

**HT2**

**Term 2**

**Term 3**

**Sets 2-4**

9B Plants topic

**Biology**

Cell structure including transport.

**Sets 2-4**

Cells

**Biology**

Organisation (to include all Triple lessons)

**Sets 2-4**

Organisation

**Biology**

Organisation & Disease

**Sets 2-4**

Disease

**Biology**

Disease (finish)

**Sets 2-4**

9F Reactivity, then Atomic structure

**Chemistry**

Atomic structure

**Sets 2-4**

Atoms

**Chemistry**

Periodic table

**Sets 2-4**

Periodic table

**Chemistry**

Structure & bonding

**Sets 2-4**

Our atmosphere, Chemical changes

**Chemistry**

Chemical Reactions & Earths Atmosphere

**Sets 2-4**

9I/J Forces & electricity

**Physics**

Conservation & dissipation of energy

**Sets 2-4**

No physics

**Physics**

Conservation & dissipation of energy

**Sets 2-4**

Energy transfers

**Physics**

Energy transfer & energy resources, start Electric circuits.

**Sets 2-4**

Electricity

**Physics**

Finish Electric circuits, Energy in the home, Molecules & matter , Radioactivity

### Why start here?

These are the topics that cover the basic principles of science. Including cells, atomic structure & energy.  
For Biology Y9 – transport osmosis & active transport is left of the cells topic until Y10 GCSE topics as these topics are too challenging at this stage.

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### Outline of content:

Eukaryotes and prokaryotes , Animal and plant cells , Cell specialisation, Cell differentiation , Microscopy

Atoms, elements and compounds , Mixtures  
The development of the model of the atom (common content with physics) , Relative electrical charges of subatomic particles, Relative atomic mass

Energy stores and systems , Changes in energy , Energy changes in systems , Power, Temperature changes in a system and specific heat capacity

### Outline of content:

Stem cells , Chromosomes , Mitosis and the cell cycle , Diffusion

The periodic table , Development of the periodic table , Metals and non-metals , Group 0 , Group 1, Group 7

Energy transfers in a system , Efficiency, National and global energy resources.

### Outline of content:

Principles of organisation , The human digestive system  
The heart and blood vessels , Blood , Plant tissues  
Plant organ systems

Chemical bonds, Ionic bonding, Ionic compounds, Covalent bonding , Metallic bonding, Properties of ionic compounds, Properties of small molecules, Polymers, Giant covalent structures, Properties of metals and alloys, Structure and bonding of carbon.

National and global energy resource, Standard circuit diagram symbols, Series and parallel circuits , Electrical charge and current, Current, resistance and potential difference, Resistors

### Outline of content:

Communicable (infectious) diseases, Bacterial diseases, Fungal diseases, Protist diseases, Human defence systems, Vaccination, Antibiotics and painkillers, Discovery and development of drugs. Photosynthesis, Respiration

Reactivity of metals , Metal oxides , The reactivity series, Extraction of metals and reduction, The proportions of different gases in the atmosphere, The Earth's early atmosphere, How oxygen increased, How carbon dioxide decreased, 5.9.2 Carbon dioxide and methane as greenhouse gases, The carbon footprint and its reduction, Pure substances, Formulations, Chromatography, Identification of common gases

Direct and alternating potential difference, Mains electricity, Power, Energy transfers in everyday appliances, The National Grid. Changes of state and the particle model, Density of materials, Changes of state, Internal energy, Particle motion in gases

### Teaching these topics here supports:

B3&4 Organisation, B5-7 Disease.  
C3 Structure & bonding.  
P2 Energy transfer by heating.

### Teaching these topics here supports:

B5-7 Disease.  
C3 Structure & bonding.  
C4 Quantitative chemistry.

### Teaching these topics here supports:

C13 Links to B8 & 9 Bioenergetics

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### These topics feed from:

Y7 Cells & organisms., Y7 Atoms, elements & compounds., Y7 mixtures and separation Y7 Energy topic 8K Energy transfer

### These topics feed from:

Y7 Cells & organisms, 8C Breathing & respiration.  
Y7 Atoms, elements & compounds, 8F Periodic table.  
Y7 Energy topic, 8K Energy transfer

### These topics feed from:

Y7 Cells & organisms., 8A Food & nutrition, 8C Breathing & respiration.  
Y7 Atoms, elements & compounds. 7J Current electricity

### These topics feed from:

8E Combustion.  
8D Unicellular organisms.  
7G Particle model, 7L Energy.