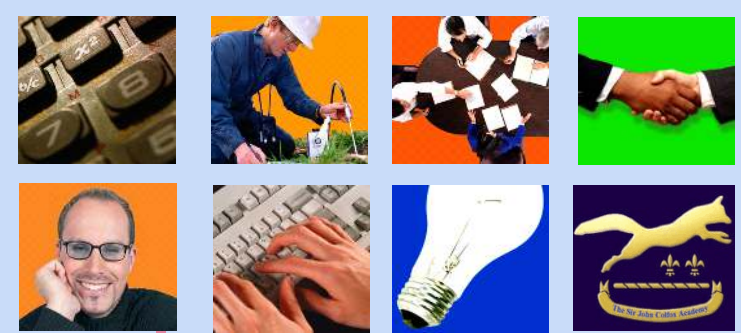
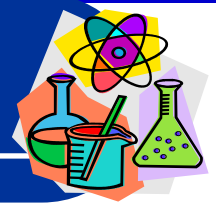


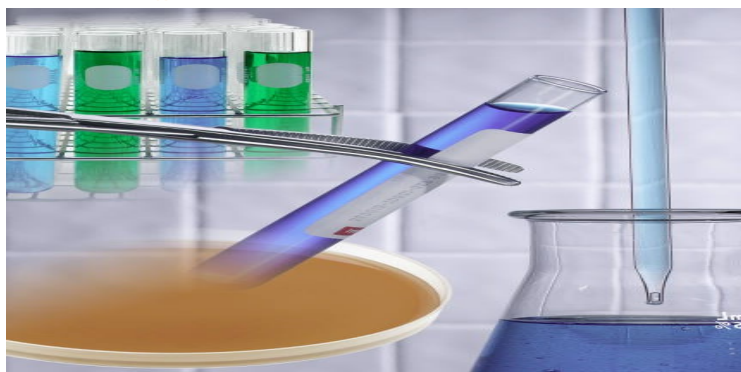
# Science at Sir John Colfox Academy



## AQA Key Stage 3 Science Courses?

Our AQA Key Stage 3 Science Syllabus has allowed us to create engaging lessons and promotes teaching for understanding by using a helical approach to key concepts. All content covered in Year 7 is repeated and extended in Year 8 and Year 9 and then through to GCSE AQA science courses.

Using a logical order of objectives, this syllabus uses big ideas and mastery goals to equip students for success at GCSE. It also includes all of the key skills such as graphs and practical skills students need to succeed at GCSE



### Year 7 Science Course

## Year 7

### 7P1 Intro to Forces

- 1.1.1 Introduction to forces
- 1.1.2 Balanced and unbalanced

### 1.3.1 Friction and drag

- 1.2.1 Gravity

### 7P2 Magnetism

#### 2.3 Magnetism

- 2.3.1 Magnets and magnetic fields

#### 2.4 Electromagnets

- 2.4.1 Electromagnets
- 2.4.2 Using electromagnets

### 7P3 Heating & Cooling

#### 3.4 Heating and cooling

- 3.4.1 Energy and temperature
- 3.4.2 Energy transfer: particles
- 3.4.3 Energy transfer: radiation and insulation

- 4.3.2 Radiation and energy

### 7P4 Sound

#### 4.1 Sound

- 4.1.1 Sound waves and speed
- 4.1.2 Loudness and amplitude
- 4.1.3 Frequency and pitch
- 4.1.4 The ear and hearing

- 4.3.1 Sound waves, water waves, and energy

### 7C5 Particle Model

#### 5.1 Particle model

- 5.1.1 The particle model
- 5.1.2 States of matter
- 5.1.3 Melting and freezing
- 5.1.4 Boiling
- 5.1.5 More changes of state
- 5.1.6 Diffusion
- 5.1.7 Gas pressure
- 5.1.8 Inside particles

### 7C6 Acids & Alkali

#### 6.1 Acids and alkalis

- 6.1.1 Chemical reactions
- 6.1.2 Acids and alkalis
- 6.1.3 Indicators and pH
- 6.1.4 Acid strength
- 6.1.5 Neutralisation
- 6.1.6 Making salts

### 7C7 Earth Structure

#### 7.1 Earth structure

- 7.1.1 The structure of the Earth
- 7.1.2 Sedimentary rocks
- 7.1.3 Igneous and metamorphic rocks
- 7.1.4 The rock cycle
- 7.1.5 Ceramics

### 7B8 Movement & Cells

#### 8.1 Movement

- 8.1.1 Levels of organisation
- 8.1.2 The skeleton
- 8.1.3 Movement: joints
- 8.1.4 Movement: muscles

#### 8.2 Cells

- 8.2.1 Observing cells
- 8.2.2 Plant and animal cells
- 8.2.3 Specialised cells
- 8.2.4 Movement of substances
- 8.2.5 Uni-cellular organisms



### 7B9 Plants & Food Chains

#### 9.1 Interdependence

- 9.1.1 Food chains and webs
- 9.1.2 Disruption to food chains and webs
- 9.1.3 Ecosystems
- 9.1.4 Competition

#### 9.2 Plant reproduction

- 9.2.1 Flowers and pollination
- 9.2.2 Fertilisation and germination
- 9.2.3 Seed dispersal

### 7B10 Genes

#### 10.1 Variation

- 10.1.1 Variation
- 10.1.2 Continuous and discontinuous
- 10.1.3 Adapting to change

#### 10.2 Human reproduction

- 10.2.1 Adolescence
- 10.2.2 Reproductive systems
- 10.2.3 Fertilisation and implantation
- 10.2.4 Development of a fetus
- 10.2.5 The menstrual cycle

### 7C11 Universe

#### 7.2 Universe

- 7.2.1 The night sky
- 7.2.2 The Solar System
- 7.2.3 The Earth
- 7.2.4 The Moon and changing ideas

What personal attributes does studying Science develop

practical numerate hard working articulate resilience independent inquisitive motivated

## Year 8

### 8P1 More Forces

- 1.1.3 Speed
- 1.1.4 Distance–time graphs
- 1.3.2 Squashing and stretching
- 1.3.3 Turning forces

### 8P2 Pressure

- 1.4 Pressure
- 1.4.1 Pressure in gases
- 1.4.2 Pressure in liquids
- 1.4.3 Stress on solids

### 8P3 Electricity

- 2.1 Potential difference and resistance
- 2.1.1 Potential difference
- 2.1.2 Resistance
- 2.1.3 Series and parallel circuits
- 2.2 Current
- 2.2.1 Current
- 2.2.2 Charging up

### 8C5 Elements, Compounds & Mixtures

- 5.3 Elements
- 5.3.1 Elements
- 5.3.2 Atoms
- 5.3.3 Compounds
- 5.3.4 Chemical formulae
- 5.3.5 Polymers
- 5.2 Separating mixtures
- 5.2.1 Pure substances and mixtures
- 5.2.2 Solutions
- 5.2.3 Solubility
- 5.2.4 Filtration
- 5.2.5 Evaporation and distillation
- 5.2.6 Chromatography

### 8C7 Climate Change

- 7.3 Climate
- 7.3.1 Global warming
- 7.3.2 The carbon cycle
- 7.3.3 Climate change
- Chapter C13 The Earth's atmosphere
- C13.1 History of our atmosphere
- C13.2 Our evolving atmosphere
- C13.3 Greenhouse gases
- C13.4 Global climate change
- C13.5 Atmospheric pollutants



### 8C6 Chemical Reactions

- 6.2 Metals and non-metals
- 6.2.1 More about elements
- 6.2.2 Chemical reactions of metals and non-metals
- 6.2.3 Metals and acids
- 6.2.4 Metals and oxygen
- 6.2.5 Metals and water
- 6.2.6 Metal displacement reactions
- 6.3 Types of reaction
- 6.3.1 Atoms in chemical reactions
- 6.3.2 Combustion
- 6.3.3 Thermal decomposition
- 6.3.4 Conservation of mass
- 6.4 Chemical energy
- 6.4.1 Exothermic and endothermic
- 6.4.2 Energy level diagrams

### 8B8 Organisms

- 8.3 Breathing
- 8.3.1 Gas exchange
- 8.3.2 Breathing
- 8.3.3 Drugs
- 8.3.4 Alcohol
- 8.3.5 Smoking
- 8.4 Digestion
- 8.4.1 Nutrients
- 8.4.2 Food tests
- 8.4.3 Unhealthy diet
- 8.4.4 Digestive system
- 8.4.5 Bacteria and enzymes in digestion

### 8B9 Respiration & Photosynthesis

- 9.3 Respiration
- 9.3.1 Aerobic respiration
- 9.3.2 Anaerobic respiration
- 9.3.3 Biotechnology
- 9.4 Photosynthesis
- 9.4.1 Photosynthesis
- 9.4.2 Leaves
- 9.4.3 Investigating photosynthesis
- 9.4.4 Plant minerals

### 8B10 Evolution

- 10.3 Evolution
- 10.3.1 Natural selection
- 10.3.2 Charles Darwin
- 10.3.3 Extinction
- 10.3.4 Preserving biodiversity
- 10.4 Inheritance
- 10.4.1 Inheritance
- 10.4.2 DNA
- 10.4.3 Genetics
- 10.4.4 Genetic modification

### GCSE Skills

- M51 Arithmetic and numerical computation
- M52 Handling data
- M53 Algebra
- M54 Graphs
- M55 Geometry and trigonometry

## Year 9

### 9P1 Motion

- Chapter P9 Motion
- P9.1 Speed and distance–time graphs
- P9.2 Velocity and acceleration
- P9.3 More about velocity–time graphs
- P9.4 Analysing motion graphs

### 9P2 Energy Resources

- Chapter P3 Energy resources
- P3.1 Energy demands
- P3.2 Energy from wind and water
- P3.3 Power from the Sun and the Earth
- P3.4 Energy and the environment
- P3.5 Big energy issues

### 9P3 Energy Transfers

- Chapter P2 Energy transfer by heating
- P2.1 Energy transfer by conduction
- P2.2 Infrared radiation
- P2.3 More about infrared radiation
- P2.4 Specific heat capacity
- P2.5 Heating and insulating buildings

### 9P4 Light

- 4.2 Light
- 4.2.1 Light
- 4.2.2 Reflection
- 4.2.3 Refraction
- 4.2.4 The eye and vision
- 4.2.5 Colour

### 9C5 Periodic Table

- Chapter C2 The periodic table
- C2.1 Development of the periodic table
- C2.2 Electronic structures and the periodic table
- C2.3 Group 1 – the alkali metals
- C2.4 Group 7 – the halogens
- C2.5 Explaining trends
- C2.6 The transition elements

### 9C6 Atomic Structure

- Chapter C1 Atomic structure
- C1.1 Atoms
- C1.2 Chemical equations
- C1.3 Separating mixtures
- C1.4 Fractional distillation and paper chromatography
- C1.5 History of the atom
- C1.6 Structure of the atom
- C1.7 Ions, atoms, and isotopes
- C1.8 Electronic structures

### 9C7 Chemical Change

- Chapter C5 Chemical changes
- C5.1 The reactivity series
- C5.2 Displacement reactions
- C5.3 Extracting metals
- C5.4 Salts from metals
- C5.5 Salts from insoluble bases
- C5.6 Making more salts

### 9C12 Earth's Resources

- Chapter C14 The Earth's resources
- C14.1 Finite and renewable resources
- C14.2 Water safe to drink
- C14.3 Treating waste water
- C14.4 Extracting metals from ores
- C14.5 Life cycle assessments
- C14.6 Reduce, reuse, and recycle

### 9B8 – Cells in Depth

- Chapter B1 Cell structure and transport
- B1.1 The world of the microscope
- B1.2 Animal and plant cells
- B1.3 Eukaryotic and prokaryotic cells
- B1.4 Specialisation in animal cells
- B1.5 Specialisation in plant cells
- B1.6 Diffusion
- B1.7 Osmosis
- B1.8 Osmosis in plants
- B1.9 Active transport
- B1.10 Exchanging materials

### 9B9 – Energy in Biology

- Chapter B8 Photosynthesis
- B8.1 Photosynthesis
- B8.2 The rate of photosynthesis
- B8.3 How plants use glucose
- B8.4 Making the most of photosynthesis

### Chapter B9 Respiration

- B9.1 Aerobic respiration
- B9.2 The response to exercise
- B9.3 Anaerobic respiration
- B9.4 Metabolism and the liver



### 9B10 – Interdependence

- Chapter B16 Adaptations, interdependence, and competition
- B16.1 The importance of communities
- B16.2 Organisms in their environment
- B16.3 Distribution and abundance
- B16.4 Competition in animals
- B16.5 Competition in plants
- B16.6 Adapt and survive
- B16.7 Adaptation in animals
- B16.8 Adaptations in plants

### Chapter B17 Organising an ecosystem

- B17.1 Feeding relationships
- B17.2 Materials cycling
- B17.3 The carbon cycle
- B17.4 Rates of decomposition

### 9B11 Ecology & Ecosystems

- Chapter B18 Biodiversity and ecosystems
- B18.1 The human population explosion
- B18.2 Land and water pollution
- B18.3 Air pollution
- B18.4 Deforestation and peat destruction
- B18.5 Global warming
- B18.6 The impact of change
- B18.7 Maintaining biodiversity
- B18.8 Trophic levels and biomass
- B18.9 Biomass transfers
- B18.10 Factors affecting food security
- B18.11 Making food production efficient
- B18.12 Sustainable food production