



### Key Stage 2

Working Scientifically: planning, identifying variables. Taking measurements and repeats. Recording data in tables, scatter graphs, bar and line graphs. Using results to make predictions. Reporting and presenting evidence from findings including conclusions, relationships and explanations of the degree of trust in results. Using scientific evidence in support of arguments.

Living things and their habitats: life cycles of mammals, amphibians, insects and birds. Reproduction in some plants and animals. Classification on similarities and differences.

Animals, including Humans: changes as humans develop to old age, description of circulatory system, function of heart, blood vessels and blood.

Evolution and inheritance: fossils provide information about things that inhabited millions of years ago, offspring vary and are non-identical to parents, adaptations of animals to suit environments.

Properties and Changes in Materials: compare and group materials on hardness, solubility, transparency, conductivity, response to magnets. Dissolving to form a solution and recovering solid from solution. Solids, liquids and gases to decide how mixtures might be separated through filtering, sieving and evaporation. Demonstrate reversible changes. Changes that result in new materials are not reversible, including burning and action of acids on bicarbonate of soda.

Earth and Space: movement of Earth and planets relative to the Sun. Movement of moon relative to Earth. Earth's rotation to explain day and night and movement of Sun in the sky.

Forces: Gravity to explain falling objects. Identify effects of air resistance, water resistance and friction that act between moving services. Mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.

Light: light travels in straight lines, light rays drawn to explain how we see non-luminous objects. Light travels in straight line to explain why shadows have the same shape as objects that cast them.

Electricity: associate brightness of lamp or loudness of buzzer with number of cells in circuit. Use symbols when drawing circuits.

Term 1

### Year 7

- Cell structure, specialised cells and movement
- Particle model of matter and separation techniques
- Atoms, elements, compounds and reactions

*Graph skills and data handling taught throughout*

Term 2

- Systems of the body (digestive, respiratory and circulatory)
- Space and gravity
- Forces and their effects
- Sound waves

*Practical skills including planning investigations and identifying variables*

Term 3

- Acids, alkalis and neutralisation
- Reproduction in animals
- Plant structure and reproduction in plants
- Electricity and circuits

*Skills requiring analysis of data and enquiry with research*

#### Cultural Exposure:

- STEM Outreach and engagement with ambassadors
- Robotics club and competition
- British Science week
- Primary Transition
- Unilever Bright Futures
- Sky Hawk cross-curricular
- External visitor - Space PhD Student
- Eureka Trip
- BAE Roadshow
- The Faraday Challenge

### Year 8

- Motion and forces including pressure
- Health and disease
- Energy and its interactions

*Solving practical problems using knowledge and application*

- Inheritance and adaptations
- Light waves
- Periodic table and trends in reactivity
- Ecology and feeding relationships

*Describing patterns in data and evaluating communication between scientists*

- Metals and their reactions
- Earth and the atmosphere
- Electricity and magnetism
- Lifestyle choices

*Creating models to better understand abstract theories and investigative skills*

#### Cultural Exposure:

- Unilever Bright Futures
- CREST awards
- Careers in Science
- Runshaw Renewable Energy day
- UCLAN Robotics visit
- STEM Club
- STEM Challenge Day
- Eureka Trip
- The Faraday Challenge

### Year 9

- Building blocks of life
- Elements and the Periodic Table
- Particle models and changes of states

*How scientific theories have developed and developing hypotheses*

- Digestion and food
- Energy stores and transfers

*Planning of experiments, interpreting data and identifying patterns*

- Bonding and structures
- Transport in organisms and plants
- Chemical Analysis

*Selecting techniques and apparatus for experiments, recording reactions*

#### Cultural Exposure:

- Engineers Club
- British Science week
- Salter's chemistry festival
- STEM club
- Top of the Bench
- The Faraday Challenge

### Year 10

- The human body and lifestyle choices
- Bioenergetics
- Electricity, static charge and domestic appliances

*Developing explanations and explaining results of scientific investigations*

- Infection and body defences
- Atomic structure and radiation
- Energy changes in chemistry

*Ethical issues, perception of risk and carrying out experiments*

- Chemical reactions and pH scale
- Ecology (ecosystems and human activities)
- Waves and their interactions
- Organic chemistry and synthesis

*Experimenting accurately and safely, evaluating and suggesting improvements to sampling*

#### Cultural Exposure:

- Microbiologist/Marine Biologists visit
- GCSE Science live
- Women in Engineering
- STI's and unhealthy lifestyle choices
- UCLAN Workshop
- British Science week
- Top of the Bench
- National Thinking Challenge

### Year 11

- Inheritance and genetics
- Quantitative chemistry
- Forces, movement and interactions

*Ethical issues, experimenting and analysing data and recording observations*

- Homeostasis and response
- Magnetism and electromagnetism

*Translate data, peer review, checking accuracy and precision*

- Evolution of the Earth's atmosphere
- Rates of reactions
- Space and stellar evolution (separate science)

*Communicate scientific rationales for investigations using scientific vocabulary*

#### Cultural Exposure:

- GCSE Science live
- Outside speakers (Physics)
- British Science week
- Top of the Bench
- UCLAN Workshop