

<b>Subject Name:</b>	<b>Science</b>
<b>Curriculum Intent Statement</b>	
<p>As Science teachers, it is our intent is to provide a science curriculum, which will develop scientific knowledge, skills and conceptual understanding through the disciplines of Biology, Chemistry and Physics. Our teaching of science must encourage students to be scientifically literate, think critically about the world, so that in their futures they will recognise the impact of science on their everyday lives.</p>	
<b>Autumn Term 1</b>	
<p><b>Chemistry Fundamentals</b></p> <ul style="list-style-type: none"> <li>• Changing states of matter</li> <li>• Atoms and elements</li> <li>• Compounds and formulae</li> <li>• Pure substances and solutions</li> <li>• Separation techniques</li> <li>• RP: Chromatography</li> <li>• Changing Atomic Theories</li> <li>• Protons, Neutrons and Electrons</li> <li>• Electron configuration</li> <li>• Isotopes and relative atomic mass</li> <li>• The periodic table</li> <li>• The modern periodic table</li> <li>• Mini Quiz</li> <li>• Metals and non-metals</li> <li>• Uses of metals</li> <li>• Corrosion (Triple only)</li> <li>• Corrosion prevention (Triple only)</li> <li>• Transition metals (Triple only)</li> <li>• Typical properties (Triple only)</li> <li>• Alloys</li> <li>• Properties and uses of alloys (Triple only)</li> <li>• Alkali metals</li> <li>• Halogens</li> <li>• Noble Gases</li> <li>• Gas tests</li> </ul>	

## Autumn Term 2

### Investigative Chemistry

- Ionic bonding part 1
- Ionic bonding part 2
- Properties of ionic bonding
- Covalent bonding
- Properties of covalent structures
- Giant covalent structures
- Nanoparticles (Triple only)
- Metallic Bonding
- Comparing and contrasting types of bonding
- Word and symbol equations
- Balancing equations
- Conservation of mass
- Metals and oxygen
- Metals and acid
- Metals and water
- Redox reactions (Triple only)
- Acids and bases
- Acids - weak and strong (Triple only)
- Neutralisation
- RP: Soluble Salts
- RP: Titrations part 1 (Triple only)
- RP Titrations part 2 (Triple only)
- Testing for ions (Triple only)
- RP: Testing for ions part 1 (Triple only)
- RP: Testing for ions part 2 (Triple only)
- Atom economy (Triple only)
- Percentage yield (Triple only)
- Reacting masses (Triple only)
- Reactivity series and displacement reactions
- Ionic half equations for displacement (Triple only)
- Reactivity series and extraction methods
- Electrolysis of molten compounds (Triple only)
- Electrolysis of aqueous compounds (Triple only)
- RP: Electrolysis part 1 (Triple only)
- RP: Electrolysis part 2 (Triple only)
- Fossil fuel formation
- Climate change
- The greenhouse effect
- Carbon cycle
- Recycling

## Spring Term 1

### Physics - Energy and Waves

- Types of energy and energy transfers
  - Open and closed systems
  - Insulation
  - RP: Investigating thermal insulators (Triple only)
  - Non-renewable resources
  - Renewable resources
  - Comparison of energy resources
  - Work done
  - Power
  - Efficiency calculations
  - Gravitational potential energy
  - Kinetic energy
  - Elastic potential energy
  - RP: Relationship between force and extension
  - Mini Quiz
- Introduction to waves
  - Waves equation
  - Measuring speed of sound
  - Measuring period of a wave
  - RP: Measuring speed of a wave using a ripple tank
  - EM Spectrum
  - Radios (Triple only)
  - RP: Investigating IR radiation (Triple only)
  - Sound waves (Triple only)
  - Uses of sound waves (Triple only)
  - Reflection of light (Triple only)
  - Refraction of light (Triple only)
  - RP: Investigating reflection and refraction of light
  - Lenses (Triple only)
  - Magnification (Triple only)
  - Colour (Triple only)

## Spring Term 2

### Forces

- Scalar and vector quantities
  - Types of forces
  - Weight
  - Resultant forces
  - Vector diagrams
  - Speed and velocity
  - Circular motion
  - Distance time graphs
  - Acceleration and deceleration
  - Velocity time graphs
  - Terminal Velocity
  - Newton's first law
  - Newton's second law
  - Inertia and inertial mass (Triple only)
  - RP: Investigate Newton's Second Law of motion
- Newton's third law
  - Stopping distances
  - Energy transfers in stopping
  - Momentum (Triple only)
  - Momentum calculations (Triple only)
  - Moments (Triple only)
  - Levers and gears (Triple only)
  - Static electricity (Triple only)
  - Electric field patterns (Triple only)
  - Sound waves (Triple only)
  - Uses of sound waves for detection and exploration (Triple only)
  - Magnets
  - Magnetic fields
  - Electromagnets

## Summer Term 1

### Cell Biology

- Types of cells
  - Specialised cells
  - Tissues, organs and systems
  - Introducing microscopes
  - RP: Using Microscopes
  - Types of microscope
  - Multiplying bacteria (Triple only)
  - Culturing microorganisms
  - RP: Investigating Antiseptics (Part 1)
  - RP: Investigating antiseptics (Part 2)
  - Analysing Antibiotics
  - Mini Quiz
  - DNA
  - The Human Genome (Triple only)
- Mitosis and the cell cycle
  - Incredible stem cells
  - Therapeutic cloning
  - Cloning plants
  - Cloning animals (Triple only)
  - Asexual reproduction
  - Sexual Reproduction and Meiosis
  - Sexual vs asexual reproduction
  - Examples of unusual reproduction
  - Inheritance (genetic cross diagrams)
  - Family trees
  - Genetic diseases and sex determination
  - Protein Synthesis (Triple only)

## Summer Term 2

### Communicable Diseases

- Viral diseases
  - Bacterial diseases
  - Fungal and protists
  - Our barriers to diseases
  - The immune system
  - Vaccinations
  - Medicines
  - Antibiotic resistance
  - Developing new drugs (Part 1)
  - Developing new drugs (Part 2)
- Monoclonal antibodies (Triple only)
  - Scatter Graphs and Health
  - Frequency tables and histograms
  - Analysis data
  - Mini Quiz
  - Plant diseases (Triple only)
  - Parts of the brain (Triple only)
  - Brain Surgery (Triple only)
  - The Eye (Triple only)
  - Myopia and hyperopia (Triple only)