

## Programme of Study - Science

We want our students to be knowledgeable, curious learners who are able to apply their learning to the real world. We want our students to be able to use scientific language confidently, plan and run investigations to test scientific theories and be able to critically analyse data and evidence provided to them. Our curriculum prepares our learners to better understand the world they live in and make informed and wise choices. The Oasis Science Curriculum prepares students with the fundamental knowledge needed to pursue a range of careers from medicine, to engineering, from astrophysics to careers in geo science.

Year 9



## Oasis Academy Brislington: Curriculum

Year 9						
Rationale/ narrative	Year 9 is an opportunity to build on topics learnt in Year 7 and 8 as well as prepare students to tackle more difficult concepts in the curriculum. The programme of study is made up of two units of Chemistry, two of Physics and finishes with two units of Biology. Topics have been grouped together because we feel that they sequence well with each other. Students will take an assessment at October half term that assesses just the content from Autumn 1. At the end of December, students will then complete their AP1 assessment that tests them on all content covered during Autumn 1 and Autumn 2. This process is repeated for Spring and Summer terms.					
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Chemistry Fundamentals	Investigative Chemistry	Energy and Waves	Forces	Cell Biology	Communicable diseases
Content	Changing states of matter Atoms and elements Compounds and formulae Pure substances and solutions Separation techniques RP: Chromatography Changing Atomic Theories Protons, Neutrons and Electrons Electron configuration Isotopes and relative atomic mass The periodic table The modern periodic table Mini Quiz Metals and non-metals Uses of metals Corrosion (Triple only) Corrosion prevention (Triple only) Transition metals (Triple only)	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	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	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	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	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)

	<p>Typical properties (Triple only)</p> <p>Alloys</p> <p>Properties and uses of alloys (Triple only)</p> <p>Alkali metals</p> <p>Halogens</p> <p>Noble Gases</p>	<p>Acids - weak and strong (Triple only)</p> <p>Neutralisation</p> <p>RP: Soluble Salts</p> <p>RP: Titrations part 1 (Triple only)</p> <p>RP Titrations part 2 (Triple only)</p> <p>Testing for ions (Triple only)</p> <p>RP: Testing for ions part 1 (Triple only)</p> <p>RP: Testing for ions part 2 (Triple only)</p> <p>Atom economy (Triple only)</p> <p>Percentage yield (Triple only)</p> <p>Reacting masses (Triple only)</p> <p>Reactivity series and displacement reactions</p> <p>Ionic half equations for displacement (Triple only)</p> <p>Reactivity series and extraction methods</p> <p>Electrolysis of molten compounds (Triple only)</p> <p>Electrolysis of aqueous compounds (Triple only)</p> <p>RP: Electrolysis part 1 (Triple only)</p> <p>RP: Electrolysis part 2 (Triple only)</p>	<p>Measuring speed of sound</p> <p>Measuring period of a wave</p> <p>RP: Measuring speed of a wave using a ripple tank</p> <p>EM Spectrum</p> <p>Radios (Triple only)</p> <p>RP: Investigating IR radiation (Triple only)</p> <p>Sound waves (Triple only)</p> <p>Uses of sound waves (Triple only)</p> <p>Reflection of light (Triple only)</p> <p>Refraction of light (Triple only)</p> <p>RP: Investigating reflection and refraction of light</p> <p>Lenses (Triple only)</p> <p>Magnification (Triple only)</p> <p>Colour (Triple only)</p>	<p>Energy transfers in stopping</p> <p>Momentum (Triple only)</p> <p>Momentum calculations (Triple only)</p> <p>Moments (Triple only)</p> <p>Levers and gears (Triple only)</p> <p>Static electricity (Triple only)</p> <p>Electric field patterns (Triple only)</p> <p>Sound waves (Triple only)</p> <p>Uses of sound waves for detection and exploration (Triple only)</p> <p>Magnets</p> <p>Magnetic fields</p> <p>Electromagnets</p>	<p>Cloning animals (Triple only)</p> <p>Asexual reproduction</p> <p>Sexual Reproduction and Meiosis</p> <p>Sexual vs asexual reproduction</p> <p>Examples of unusual reproduction</p> <p>Inheritance (genetic cross diagrams)</p> <p>Family trees</p> <p>Genetic diseases and sex determination</p> <p>Protein Synthesis (Triple only)</p>	<p>The Eye (Triple only)</p> <p>Myopia and hyperopia (Triple only)</p>
<b>Skills</b>	<p>Calculate the number of protons, neutrons and electrons for different</p>	<p>Writing a method</p> <p>Reproducibility and repeatability</p> <p>Following a given method</p> <p>Following a</p>	<p>Independent, dependent and control variables</p> <p>Explaining differences between waves</p> <p>Stating</p>	<p>Using a manual or digital scale</p> <p>Rearranging and using equations</p> <p>Stating the resolution</p> <p>Explaining</p>	<p>Writing instructions</p> <p>Calculate uncertainty</p> <p>Creating own hypothesis</p> <p>Making scientific drawings</p>	<p>Plot and interpret scatter graphs</p> <p>showing data about health and</p>

