

## CHS Curriculum Intent

**SUCCESSFUL:** Learners who gain deep and powerful knowledge in preparation for life; combining academic rigour, curiosity and creative flair.

**CREATIVE:** Learners who are imaginative, optimistic and inventive; finding their voice to become effective communicators prepared for lifelong adaptability

**HAPPY:** Learners who are confident, resilient, well-rounded citizens; they understand the world's communities and are ready to discover their place in it.

### CHS Curriculum Area Framework for Learning – Year 9

<b>SUBJECT</b>	<b>Science</b>
<b>INTENT</b>	<p>The intent of the science department is to convey to students that Science underpins everything. At Chorlton High School we study</p> <p><b>Physics:</b> to be able to understand the fundamental principles that govern all energy and matter in the Universe. Physics gives us tools to understand nature from the scale of sub-atomic particles up to the inter-galactic scale of the Universe.</p> <p><b>Chemistry:</b> to be able to understand the nature of substances: how they are composed, their behaviour, and their physical and chemical properties. Chemistry allows us to identify unknown substances, monitor concentrations and synthesise new chemicals. Above all, Chemistry is about finding solutions to the problems that concern us and our surroundings.</p> <p><b>Biology:</b> to be able to understand life and thereby understand ourselves. Biology allows us an understanding of the amazing complexity of many life processes and mechanisms. Biology encourages us to seek out reasons for strange, surprising and sometimes unusual observations.</p>

<b>Year Group</b>	<b>9 JOS</b>					
<b>202021</b>						
<b>Rationale/ Narrative</b>	Year 9 will begin to cover the fundamental ideas needed for GCSE science. During the year students will reinforce the knowledge that they have gained in years 7 and 8 and focus on building on these key ideas to ensure a good foundation for the Key Stage 4 GCSE in Combined or Separate Sciences. Students will study an equal mix of Biology, Chemistry and Physics across the year and the skills of working scientifically will be embedded throughout.					
	<b>Autumn 1</b>	<b>Autumn 2</b>	<b>Spring 1</b>	<b>Spring 2</b>	<b>Summer 1</b>	<b>Summer 2</b>
<b>Knowledge</b>	<b>Human Body (inc 4.1)</b> Animal and plant cells. Microscopy Microscopy write up. Cell differentiation. Cell specialization. Eukaryotic and prokaryotic cells. Microscopy FBW. Chromosomes. Aerobic respiration. Anaerobic respiration. Skeletal system. Muscular systems. Biomechanics. Drugs (recreational and drugs in sport). Drugs in sport assessment. Speech writing Drugs in sport FBW	<b>Earth and Space</b> Renewable and Non renewable Global warming The rock cycle (types of rock) The Earth's structure Composition of the atmosphere Days and seasons Space (planets, stars and galaxies) Gravity The Light year	<b>Paper 1 units</b> <b>Physics – 6.1 Energy</b> 6.1.1.1 Energy stores and systems 6.1.1.2 Changes in energy 6.1.1.3 Energy changes in systems 6.1.1.4 Power 6.1.2 Conservation and dissipation of energy 6.1.2.1 Energy transfers in a system 6.1.2.2 Efficiency 6.1.3 National and global energy resources	<b>Biology – 4.2 Organisation</b> 4.2.1 Principles of organisation 4.2.2 Digestive system and digestive enzymes <b>4.2.2 Required prac 3 (food tests)</b> <b>4.2.2 Required prac 4 (effect of pH on enzyme activity)</b> 4.2.2.2 The heart and blood vessels 4.2.2.3 Blood 4.2.2.4 Coronary heart disease 4.2.2.5 Health issues 4.2.2.6 Lifestyle choices 4.2.2.7 Cancer 4.2.3.1 Plant tissues 4.2.3.2 Plant organ systems	<b>Chemistry – 5.1 Atomic structure and the periodic table</b> 5.1.1.1 Atoms, elements and compounds 5.1.1.2 Mixtures 5.1.1.3 The development of the model of the atom (common content with physics) 5.1.1.4 Relative electrical charges of subatomic particles 5.1.1.5 Size and mass of atoms 5.1.1.6 Relative atomic mass 5.1.1.7 Electronic structure 5.1.2.1 The periodic table 5.1.2.2 Development of the periodic table	<b>Chemistry – 5.2 Bonding, structure, and the properties of matter</b> 5.2.1.1 Chemical bonds 5.2.1.2 Ionic bonding 5.2.1.3 Ionic compounds 5.2.1.4 Covalent bonding 5.2.1.5 Metallic bonding 5.2.2.1 The three states of matter 5.2.2.2 State symbols 5.2.2.3 Properties of ionic compounds 5.2.2.4 Properties of small molecules 5.2.2.5 Polymers 5.2.2.6 Giant covalent structures 5.2.2.7 Properties of metals and alloys

				<p><b>(Topics from 4.1 Cell Biology)</b></p> <p>4.1.2 Chromosomes and cell division 4.1.2.2 Mitosis and the cell cycle 4.1.2.3 Stem cells 4.1.3.1 Diffusion 4.1.3.2 Osmosis <b>4.1.3.2 Required prac 2 (osmosis)</b> 4.1.3.3 Active transport</p>	<p>5.1.2.3 Metals and non-metals 5.1.2.4 Group 0 5.1.2.5 Group 1 5.1.2.6 Group 7</p>	<p>5.2.2.8 Metals as conductors 5.2.3.1 Diamond 5.2.3.2 Graphite 5.2.3.3 Graphene and fullerenes</p>
<b>SKILLS</b>	<p>Develop microbiology practical techniques in microscopy.</p> <p>Develop numeracy skills relating to magnification.</p> <p>Analyse differences between different types of cells. E.g. Prokaryote, eukaryote and a range of specialised cells.</p> <p>Reading comprehension on the difference between aerobic and anerobic respiration.</p> <p>Use of prefixes centi-, milli-, micro and nano-</p>	<p>Evaluation of energy resources using data sources.</p> <p>Analyse advantages and disadvantages of renewable energy.</p> <p>Analysis of data from the department of energy relating to global warming.</p> <p>Interpret graphs showing climate change data.</p> <p>Practical skills- analysis of rock samples, and identification using data.</p>	<p>Calculate energy changes</p> <p>Recall and apply the following equations:  <math>KE = \frac{1}{2} mv^2</math>  <math>GPE = mgh</math>  <math>P = E/t</math>  <math>P = W/t</math></p> <p>Use of equations to calculate efficiency</p> <p>Use of prefixes centi-, milli-, micro and</p>	<p>Using models to explain enzyme action.</p> <p>RP- Investigating the effect of pH on enzyme action.</p> <p>RP- Investigating the effect of different concentrations of salt and sugar solution on mass of plant tissue.</p> <p>Calculating percentage gain and loss of plant tissue linked to RP.</p>	<p>Represent the first 20 elements in both numerical form and as a diagram showing electron configuration</p> <p>Use the periodic table to make predictions on reactivity</p> <p>Understand how theories develop linked to the development of the periodic table</p>	<p>Predict properties down periodic table groups.</p> <p>Visualise and represent 2D and 3D forms of chemical bond.</p> <p>Be able to draw dot and cross diagrams to represent ionic and covalent bonds.</p>

	<p>in relation to cells and microscopy</p> <p>RP- Use of a light microscope to observe, drawn and label cells</p> <p>Comparison of different bones and their roles in the body's movement.</p> <p>Knowledge of recreational drugs and their effects on the human body. Diagnosing which drug has been taken based on patient symptoms.</p> <p>Consider moral and ethical issues relating to use of performance enhancing drugs in sport.</p>	<p>Analysis of bias and reliability of NASA articles</p> <p>Calculate quantities relating to speed, distance and time.</p> <p>Have an understanding of the lightyear.</p> <p>Use of prefixes-kilo, mega, giga</p>				
<b>ASSESSMENTS</b>	<p>Required Practical 1 (RP 1) write up and analysis – Microscopy</p> <p>Lance Armstrong Drugs in Sport (Oracy)</p>	<p>How to save the world write up-letter on how to reduce climate change.</p> <p>End of topic test (L1/L2/L3)</p>	Energy big write	<p>RP 3 food tests</p> <p>RP 4 enzyme action</p> <p>RP 2 osmosis</p> <p>Progress test Autumn and Spring content</p>	Comparison Groups 1,7,0	<p>Bonding comparison</p> <p>Progress test spring and summer content</p>

		Progress test End of KS3 Exam				
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