

## Hobart High School Key Stage 4 Curriculum Map – Year 10

### Science AQA GCSE Combined and GCSE Biology, Chemistry and Physics

	GCSE Unit, Topic or Summary of work covered (NB Order may differ depending on specialist teacher pairing.)	Knowledge & Skills Developed	Assessment	Personal Development
<b>Autumn 1</b>	Biology: Infection and Response, Bioenergetics	<b>Knowledge:</b> Communicable (infectious) diseases Viral diseases Bacterial diseases Fungal diseases Protist diseases Human defence systems Vaccination Antibiotics and painkillers Discovery and development of drugs <b>Working Scientifically:</b> Development of Scientific Thinking <b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs	Infection and Response Exam Assessed Required Practicals	Hygiene Infection Control (vaccination) STIs Legal and Illegal drugs
<b>Autumn 2</b>	Biology: Bioenergetics, Homeostasis and Response	<b>Knowledge:</b> Photosynthetic reaction Rate of photosynthesis Uses of glucose from photosynthesis Aerobic and anaerobic respiration Response to exercise Metabolism Homeostasis The human nervous system Human endocrine system Control of blood glucose concentration Hormones in human reproduction Contraception The use of hormones to treat infertility (HT only) Negative feedback (HT only)	Bioenergetics Exam Assessed Required Practicals	Contraception Fertility Exercise Diabetes

		<b>Working Scientifically:</b> Development of Scientific Thinking <b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs		
Spring 1	Chemistry: Quantitative Chemistry, Chemical Changes, Energy Changes	<b>Knowledge:</b> Conservation of mass and balanced chemical equations Relative formula mass Mass changes when a reactant or product is a gas Chemical measurements Moles (HT only) Amounts of substances in equations (HT only) Using moles to balance equations (HT only) Limiting reactants (HT only) Concentration of solutions Metal oxides The reactivity series Extraction of metals and reduction Oxidation and reduction in terms of electrons (HT only) Reactions of acids with metals Neutralisation of acids and salt production Soluble salts The pH scale and neutralisation Strong and weak acids (HT only) The process of electrolysis Electrolysis of molten ionic compounds Using electrolysis to extract metals Electrolysis of aqueous solutions Representation of reactions at electrodes as half equations (HT only) <b>Working Scientifically:</b> Development of Scientific Thinking , Analysis and Evaluation, Scientific vocabulary (units, symbols) <b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra	Quantitative Chemistry Exam Assessed Required Practicals	Energy consumption and links between CO <sub>2</sub> and climate change

Spring 2	Chemistry: Energy Changes, Rate and Extent of Chemical Changes	<p><b>Knowledge:</b>            Energy transfer during exothermic and endothermic reactions            Reaction profiles            The energy change of reactions (HT only)            Calculating rates of reactions            Factors which affect the rates of chemical reactions            Collision theory and activation energy            Catalysts            Reversible reactions            Energy changes and reversible reactions            Equilibrium            The effect of changing conditions on equilibrium (HT only)            The effect of changing concentration (HT only)            The effect of temperature changes on equilibrium (HT only)            The effect of pressure changes on equilibrium (HT only)</p> <p><b>Working Scientifically:</b> Development of Scientific Thinking,  <b>Maths Skills:</b> Arithmetic and numerical computation, Algebra, Graphs and Geometry</p>	Chemical Changes Exam Assessed Required Practicals	
Summer 1	Physics: Electricity and Particle Model of Matter,	<p><b>Knowledge:</b>            Current, potential difference and resistance            Series and parallel circuits            Domestic uses and safety            Energy transfers            Changes of state and the particle model            Internal energy and energy transfers            Particle model and pressure</p> <p><b>Working Scientifically:</b>            Development of Scientific thinking, Analysis and Evaluation, Scientific vocabulary  <b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs</p>	Electricity Exam Assessed Required Practicals	Safe use of domestic electricity Energy Efficiency

Summer 2	Physics: Atomic Structure, Forces	<p><b>Knowledge:</b></p> <ul style="list-style-type: none"> <li>Atoms and isotopes</li> <li>Atoms and nuclear radiation</li> <li>Forces and their interactions</li> <li>Work done and energy transfer</li> <li>Forces and elasticity</li> <li>Forces and motion</li> <li>Speed/Velocity</li> <li>Newton's Laws</li> <li>Stopping Distances</li> <li>Momentum (HT only)</li> </ul> <p><b>Working Scientifically:</b></p> <ul style="list-style-type: none"> <li>Development of Scientific Thinking, Analysis and Evaluation, Scientific vocabulary, Experimental Skills and Strategies</li> </ul> <p><b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs</p>	Particle Model of Matter Exam Assessed Required Practicals	Stopping distances
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<b>Autumn 1</b>	Biology: Inheritance, Variation and Evolution and Ecology	<b>Knowledge:</b> Sexual and asexual reproduction Meiosis DNA and the genome Genetic inheritance Inherited disorders Sex determination <b>Working Scientifically:</b> Development of Scientific Thinking, Experimental Skills and Strategies <b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs	Inheritance, Variation and Evolution Exam Assessed Required Practicals	
<b>Autumn 2</b>	Chemistry: Organic Chemistry, Chemical Analysis, Chemistry of the Atmosphere	<b>Knowledge:</b> Crude oil, hydrocarbons and alkanes Fractional distillation and petrochemicals Properties of hydrocarbons Cracking and alkenes Pure substances Formulations Chromatography Identification of common gases The proportions of different gases in the atmosphere The Earth's early atmosphere How oxygen increased How carbon dioxide decreased Greenhouse gases Human activities which contribute to an increase in greenhouse gases in the atmosphere Global climate change	Organic Chemistry Exam Assessed Required Practicals Y11 Mocks (Paper 1 B, C, P)	Use of finite natural resources Pollution Climate Change Sustainability

		<p>The carbon footprint and its reduction Atmospheric pollutants from fuels Properties and effects of atmospheric pollutants</p> <p><b>Working Scientifically:</b> Development of Scientific Thinking, Analysis and Evaluation, Scientific vocabulary, Experimental Skills and Strategies</p> <p><b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs</p>		
<b>Spring 1</b>	<p>Chemistry: Using Resources Physics: Waves</p>	<p><b>Knowledge:</b> Using the Earth's resources and sustainable development Potable water Waste water treatment Alternative methods of extracting metals (HT only) Life cycle assessment Ways of reducing the use of resources Waves in air, fluids and solids Electromagnetic waves Uses and applications of Electromagnetic Waves</p> <p><b>Working Scientifically:</b> Development of Scientific Thinking, Analysis and Evaluation, Scientific vocabulary, Experimental Skills and Strategies</p> <p><b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs</p>	<p>Waves Exam Assessed Required Practicals</p>	<p>Sustainability – use of resources</p>
<b>Spring 2</b>	<p>Physics: Magnetism and Electromagnetism</p>	<p><b>Knowledge:</b> Permanent and induced magnetism Poles of a Magnet Magnetic forces Magnetic Fields The motor effect Fleming's Left-hand rule (HT Only)</p> <p><b>Working Scientifically:</b> Analysis and Evaluation, Scientific vocabulary, Experimental Skills and Strategies</p> <p><b>Maths Skills:</b> Arithmetic and numerical computation, Handling Data, Algebra, Graphs</p>	<p>Assessed Required Practicals</p>	

<b>Summer 1</b>	Revision		Practice Exam Papers Required Practical Questions 6 Mark Question Practice	
<b>Summer 2</b>	Revision		Practice Exam Papers Assessed Required Practicals 6 Mark Question Practice	