

HIGHFIELDS SCHOOL

CURRICULUM OVERVIEW 2023-2024



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SUBJECT: GCSE COMBINED SCIENCE (FOUNDATION) **EXAMINATION BOARD:** OCR

AUTUMN TERM - YEAR 9	SPRING TERM - YEAR 9	SUMMER TERM – YEAR 9
<p>B1: Cell level systems B1.1 Cell structures B1.2 What happens in cells C1: Particles 1.1 Particle model 1.2 Atomic structure C2: Elements, compounds and mixtures C2.1 Purity and separating mixtures P1: Matter 1.1 The particle model 1.2 - Changes of state</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> Calculating density Heating curve for ice Specific heat capacities of different metals Microscopy Metals and water reactions Metals and acid reactions Metal displacement reactions Group 7 halogens and displacement Investigation of trolleys on ramps at an angle Investigation of acceleration 	<p>B1: Cell level systems B1.3 Respiration B1.4 Photosynthesis C3: Chemical reactions C3.1 Introducing chemical reactions C3.2 Energetics C3.3 Types of reactions P2: Forces 2.1 Motion 2.2 Newton's Laws</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> Fermentation Investigation Aerobic Exercise Investigation Photosynthesis Investigations Photosynthesis Investigations Osmosis Investigations Specialised cells and mitosis microscopy Velocity of ball bearings in glycerol Measuring temperature changes 	<p>B2: Scaling up B2.1 Supplying the cell 2.2 The challenges of size C4: Predicting and identifying reactions and products C4.1 Predicting chemical reactions C3: Chemical reactions P2: Forces 2.3 Forces in action</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> Use of light gates, masses and trolleys Behaviour of springs and elastic bands Producing pure dry samples of salt Metal displacement reactions Determining pH of solutions Neutralisation reactions Demonstration of heart structure
<p>ASSESSMENT A mixed-science topic test including C1.1, P1.1, P1.2 and B1.1 A mixed-science topic test including C1.2, B1.2, and P2.1</p>	<p>ASSESSMENT A mixed-science topic test including C4.1, C3.1, B1.3, B1.4, and C3.2 A mixed-science topic test including P2.2, and B2.1</p>	<p>ASSESSMENT A mixed-science topic test including P2.3 and C3.3 End of Year exam including all B1, B2, C1, C3, P1, P2</p>

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AUTUMN TERM - YEAR 10	SPRING TERM - YEAR 10	SUMMER TERM – YEAR 10
<p>B3: Organism level systems B3.1 Coordination and control – the nervous system B3.2 Coordination and control – the endocrine system B3.3 Maintaining internal environments</p> <p>C2: Elements, compounds and mixtures C2.3 Properties of materials C2.2 Bonding</p> <p>C3: Chemical reactions C3.4 Electrolysis</p> <p>P3: Electricity and Magnetism 3.1 Static and charge 3.2 Simple circuits</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> • Use of a Van de Graaff generator • Use of the gold leaf electroscope and a charged rod • Building of circuits • Investigation of wire length on resistance • Investigation of I-V characteristics • Investigation of resistance • Investigation into heat loss from plasticine shapes 	<p>B4: Community level systems B4.1 Ecosystems</p> <p>B5: Genes, inheritance and selection B5.1 Inheritance B5.2 Natural selection and evolution</p> <p>P3: Electricity and Magnetism 3.3 Magnets and magnetic fields</p> <p>P4: Waves and radioactivity 4.1 Wave behaviour 4.2 The electromagnetic spectrum</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> • Electrolysis • Plotting of magnetic fields • Observing sound waves on an oscilloscope • Investigation of reflection and refraction • Investigation of electromagnetic waves • Investigating variation 	<p>B6: Global challenges B6.1 Monitoring and maintaining the environment</p> <p>C5: Monitoring and controlling chemical reactions C5.1 Controlling reactions C5.2 Equilibria</p> <p>C6: Global Challenges C6.1 Improving processes and products</p> <p>P4: Waves and radioactivity 4.3 Radioactivity</p> <p>Potential Practical Activities</p> <ul style="list-style-type: none"> • Collecting a gas practical • Rates of reaction: effects of temperature, concentration, surface area and catalysts • Using dice to model random decay and half-life • Use of a Geiger Muller tube, sources and aluminium plates of varying thicknesses to investigate change in count rate
<p>ASSESSMENT A mixed-science topic test including B3.1, B3.2 and C2.1</p> <p>A mixed-science topic test including P3.2 and C2.2</p>	<p>ASSESSMENT A mixed-science topic test including P3.3, B4.1 and P4.1</p> <p>A mixed-science topic test including C3.4, C2.3 and B5.1</p>	<p>ASSESSMENT End of Year exam using Past Examination Papers covering B1-3, C1-3 and P1-3</p> <p>A mixed-science topic test including P4.3, C5.1 and C5.2</p>

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AUTUMN TERM - YEAR 11	SPRING TERM - YEAR 11	SUMMER TERM - YEAR 11
<p>B6: Global challenges B6.2 Feeding the human race</p> <p>C6: Global Challenges C6.1 Improving processes and products C6.2 Interpreting, interacting with Earth systems</p> <p>P5: Energy 5.1 Work done 5.2 Power and efficiency</p> <p>Practical Work</p> <ul style="list-style-type: none"> • Exploring energy stores and transfers in different objects • Use of light gates and data loggers • Use of a joule meter to calculate specific heat capacity of a metal block • Investigation of energy changes and efficiency of bouncy balls • Investigation of rate of cooling with insulated and non-insulated copper cans 	<p>P6: Global challenges 6.1 Physics on the move 6.2 Powering Earth</p> <p>B6: Global challenges B6.3 Monitoring and maintaining health</p> <p>Practical Work</p> <ul style="list-style-type: none"> • Investigation of reaction time • Investigation of stopping distances • Investigation of crumple zones and safety features in cars • Comparison of temperature changes inside sealed transparent containers with different gases inside • Investigation into growth bacterial cultures using aseptic techniques • Investigation into growth bacterial cultures using aseptic techniques 	<p style="text-align: center;">Revision and intervention B1 – B6 C1 – C6 P1 – P6</p>
<p>ASSESSMENT Pre-mock exams using Past Examination Papers covering B1-3, C1-3 and P1-3 Mock exams using Past Examination Papers covering B1-3, C1-3 and P1-3</p>	<p>ASSESSMENT Mock exams using Past Examination Papers covering B4-6, C4-6 and P4-6</p>	<p>ASSESSMENT Final GCSE examinations Two 1 hour 10 minutes written papers each worth 16.7 % of the GCSE (60 marks each) Paper 1 assesses content from Topics 1 – 3. Paper 2 assesses content from Topics 4 – 6, with assumed knowledge of Topics 1 – 3.</p> <p>Each paper has 2 sections: Section A contains 10 multiple choice questions Section B includes short answer question styles and an extended six-mark Level of Response question. This section of the paper is worth 50 marks.</p>