



# Years 10 & 11 Curriculum

## GCSE: Combined Science



Year 10	Term 1 (Autumn)		Term 2 (Spring)		Term 3 (Summer)	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Topic</b>	<b>Cell Biology</b>	<b>Energy</b>	<b>Structure &amp; Bonding</b>	<b>Infection &amp; Response</b>	<b>Particle Model of Matter</b>	<b>Chemical Changes</b>
<b>Key Concepts</b>	<ul style="list-style-type: none"> <li>Cell structure</li> <li>Microscopy &amp; magnification</li> <li>Prokaryotes &amp; eukaryotes</li> <li>Differentiation &amp; specialised cells</li> <li>Cell cycle &amp; mitosis</li> <li>Stem cells</li> <li>Diffusion</li> <li>Osmosis</li> <li>Active transport</li> </ul>	<ul style="list-style-type: none"> <li>Energy stores</li> <li>Energy Transfers</li> <li>Work done</li> <li>Conservation of energy</li> <li>Changes in energy</li> <li>Power</li> <li>Efficiency</li> <li>Generating electricity</li> <li>Evaluation of energy resources</li> </ul>	<ul style="list-style-type: none"> <li>Covalent bonding &amp; properties</li> <li>Ionic bonding &amp; properties</li> <li>Metallic bonding, alloys and properties</li> <li>Giant covalent structures (including fullerenes &amp; graphene)</li> <li>Polymers</li> </ul>	<ul style="list-style-type: none"> <li>Cancer</li> <li>Health &amp; lifestyle factors &amp; disease</li> <li>Pathogens</li> <li>Defence against disease</li> <li>Vaccination</li> <li>Antibiotics &amp; painkillers</li> <li>Drug trials</li> </ul>	<ul style="list-style-type: none"> <li>Density of regular/irregular shaped objects</li> <li>Particle model</li> <li>Changes of state</li> <li>Physical &amp; chemical changes</li> <li>Specific heat capacity</li> <li>SHC Required practical</li> <li>Internal energy &amp; latent heat</li> <li>Motion of particles in a gas</li> </ul>	<ul style="list-style-type: none"> <li>Separating techniques</li> <li>Reactions of metals</li> <li>Salts</li> <li>Electrolysis</li> <li>Half-equations (HT only)</li> </ul>

Year 10	Term 1 (Autumn)		Term 2 (Spring)		Term 3 (Summer)	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Topic</b>	<b>Atomic Structure &amp; the Periodic Table</b>	<b>Organisation</b>	<b>Electricity</b>	<b>Energy Changes</b>	<b>Bioenergetics</b>	<b>Radioactivity</b>
<b>Key Concepts</b>	<ul style="list-style-type: none"> <li>Atoms, elements &amp; compounds</li> <li>History of the atom</li> <li>Atomic structure</li> <li>Ions &amp; isotopes</li> <li>Development of the periodic table</li> <li>Metals, non-metals &amp; transition elements</li> <li>Groups 1, 7 and 0</li> <li>Balancing equations</li> <li>Relative formula mass</li> </ul>	<ul style="list-style-type: none"> <li>Organisation &amp; digestive system</li> <li>Enzymes</li> <li>Heart &amp; circulation</li> <li>Blood vessels &amp; blood components</li> <li>Coronary heart disease</li> <li>Lung structure &amp; functions</li> <li>Plant tissues &amp; organs</li> <li>Plant transport</li> </ul>	<ul style="list-style-type: none"> <li>Circuit symbols</li> <li>Charge &amp; current</li> <li>Potential difference</li> <li>Ohm's Law &amp; resistance</li> <li>Series &amp; parallel circuits</li> <li>IV characteristics</li> <li>Thermistors and LDRs</li> <li>Electricity at home</li> <li>Power &amp; energy</li> </ul>	<ul style="list-style-type: none"> <li>Exothermic / endothermic reactions &amp; reaction profiles</li> <li>Bond energy (HT only)</li> <li>Neutralisation &amp; pH</li> <li>Strong &amp; weak acids (HT only)</li> </ul>	<ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Limiting factors, greenhouses and uses of glucose</li> <li>Aerobic respiration &amp; metabolism</li> <li>Anaerobic respiration</li> <li>Response to exercise</li> </ul>	<ul style="list-style-type: none"> <li>Rutherford scattering experiment</li> <li>Atomic Structure</li> <li>Radioactive Decay</li> <li>Half Life</li> <li>Irradiation and contamination</li> </ul>

Key:

Biology Topics	Chemistry Topics	Physics Topics
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# Years 10 & 11 Curriculum *continued*

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Year 11	Term 1 (Autumn)		Term 2 (Spring)		Term 3 (Summer)	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Topic</b>	<b>Homeostasis &amp; Response</b>	<b>Quantitative Chemistry</b>	<b>Forces</b>	<b>Ecology</b>	<b>Forces Electromagnetism</b>	
<b>Key Concepts</b>	<ul style="list-style-type: none"> <li>The human nervous system</li> <li>Homeostasis, endocrine &amp; body temperature</li> <li>Control of blood glucose</li> <li>Hormones &amp; the menstrual cycle</li> <li>Hormones &amp; infertility/contraception</li> </ul>	<ul style="list-style-type: none"> <li>Moles, formula mass &amp; balancing equations</li> <li>Limiting reactants</li> <li>From masses to balanced equations</li> <li>Reacting masses</li> <li>Concentrations</li> <li>Bond enthalpy calculations</li> </ul>	<ul style="list-style-type: none"> <li>Forces and their interactions</li> <li>Resultant forces</li> <li>Work done</li> <li>Forces and elasticity</li> <li>Describing motion along a line</li> <li>Distance time graphs</li> <li>Velocity time graphs</li> <li>Acceleration</li> </ul>	<ul style="list-style-type: none"> <li>Classification</li> <li>Communities, abiotic &amp; biotic factors</li> <li>Adaptations including extremophiles</li> <li>Food chains &amp; predator prey relationships</li> <li>Water &amp; carbon cycles</li> <li>Land use &amp; waste management</li> <li>Maintaining biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>Newton's 1<sup>st</sup> and 3<sup>rd</sup> Laws</li> <li>Newton's 2<sup>nd</sup> Law</li> <li>Stopping distances &amp; reaction times</li> <li>Forces &amp; braking</li> <li>Momentum Magnets and magnetic fields</li> <li>Electromagnetism</li> <li>Fleming's left-hand rule and electric motors (HT only)</li> </ul>	

Year 11	Term 1 (Autumn)		Term 2 (Spring)		Term 3 (Summer)	
	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>Topic</b>	<b>Waves</b>	<b>Inheritance &amp; Variation</b>	<b>Rates of Reaction</b>	<b>Organic Chemistry</b>	<b>Earth's Resources</b>	
<b>Key Concepts</b>	<ul style="list-style-type: none"> <li>Wave properties</li> <li>Transverse and longitudinal waves</li> <li>The Wave equation</li> <li>Electromagnetic waves</li> <li>Uses of EM waves</li> <li>Refraction</li> <li>Changes in atoms and radio waves</li> </ul>	<ul style="list-style-type: none"> <li>Sexual &amp; asexual reproduction</li> <li>DNA &amp; the genome</li> <li>Meiosis</li> <li>Inheritance &amp; gender</li> <li>Types of variation</li> <li>Evolution, natural selection</li> <li>Evidence for evolution</li> <li>Selective breeding &amp; genetic engineering</li> </ul>	<ul style="list-style-type: none"> <li>Rate of reaction &amp; collision theory</li> <li>Factors affecting rate</li> <li>Reversible reactions</li> <li>Equilibrium</li> </ul>	<ul style="list-style-type: none"> <li>Crude oil, hydrocarbons &amp; alkanes</li> <li>Fractional distillation</li> <li>Combustion</li> <li>Cracking &amp; alkenes</li> <li>Covalent bonding &amp; properties</li> <li>Giant covalent structures (including fullerenes &amp; graphene)</li> </ul> <p><b>Chemistry of the Atmosphere</b></p> <ul style="list-style-type: none"> <li>Earth's early atmosphere</li> <li>Greenhouse effect and climate change</li> <li>Pure substances, formulations &amp; chromatography</li> <li>Testing for gases</li> </ul>	<ul style="list-style-type: none"> <li>Earth's Resources</li> <li>Life cycle assessments</li> <li>Extraction of metals</li> <li>Purifying water</li> </ul>	

Key:

Biology Topics	Chemistry Topics	Physics Topics
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# Years 10 & 11 Assessment

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All pupils will sit several knowledge tests and a mock examination in Year 10. In Year 11, pupils will sit an assessment and a mock examination.

	Year 10		Year 11		Revision Resources
	Knowledge Tests	Mock Exam	Assessment	Mock Exam	
	Autumn/Spring Terms	Summer Term	Autumn Term	Spring Term	
Style of Assessment	Each knowledge test will consist of 20 multiple-choice questions	Each assessment will contain a variety of questions including multiple choice, structured, closed short answer, and open response			<i>Kennet Resources</i> <ul style="list-style-type: none"> <li>• Core Questions</li> <li>• Knowledge Organisers</li> <li>• Learning Habits</li> </ul>
Topics Assessed	<p><b>Knowledge Test 1</b> Core knowledge of Cell Biology and Atomic Structure and the Periodic Table</p> <p><b>Knowledge Test 2</b> Cells and organisation, atomic structure and periodic table, Structures and bonding, energy and electricity</p>	<ul style="list-style-type: none"> <li>• <b>Biology:</b> Cell biology, organisation</li> <li>• <b>Chemistry:</b> Atomic structure and the periodic table, bonding and structure</li> <li>• <b>Physics:</b> Energy, electricity</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Biology:</b> Cell biology, organisation; infection and response, bioenergetics</li> <li>• <b>Chemistry:</b> Atomic structure and the periodic table, bonding and structure, chemical and energy changes</li> <li>• <b>Physics:</b> Energy, electricity, particle model of matter, atomic structure (radioactivity)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Biology:</b> Cell biology, organisation; infection and response and bioenergetics (<i>Paper 1</i>)</li> <li>• <b>Chemistry:</b> Atomic structure and the periodic table, bonding and structure, quantitative chemistry, chemical changes, energy changes (<i>Paper 1</i>)</li> <li>• <b>Physics:</b> Energy, electricity, particle model of matter, atomic structure (<i>Paper 1</i>)</li> </ul>	<i>External Resources</i> <ul style="list-style-type: none"> <li>• <a href="http://www.educake.co.uk">www.educake.co.uk</a></li> <li>• <a href="http://www.educationquizzes.com">www.educationquizzes.com</a></li> <li>• <a href="http://www.bbc.com/bitesize">www.bbc.com/bitesize</a></li> <li>• <a href="http://www.youtube.com">www.youtube.com</a></li> <li>• <a href="#">Science Revision Bank</a></li> </ul>