

Year 10 Combined Science Curriculum Plan

Biology, chemistry and physics units are taught in rotation.

| | Key concept/ Key question | Overview of the unit | Assessment | Cross Curricular Skills | Suggested reading material and websites: |
|-------------|---|--|---|---|--|
| Biology 3 | How are living things organised? How does the digestive | Building on Y9 work on cells the unit looks at tissues, organs and organ systems – focusing on the human digestive system. | Assessment is based around end of topic tests – typically around 55 min. at the end of | Numeracy: Calculation of rates of reaction. Plotting graphs. Thinking Skills: Use and | Students are following the AQA science specifications. <u>http://www.aqa.org.uk/subjects/science/gcse</u> All students have access to Kerboodle which contains a |
| | system work? What are enzymes? | Protein structure is introduced in the context of enzyme function. Factors which effect enzyme function are considered then linked back into enzymes in the digestive system. | each unit. These tests contain a mixture of recall and application questions based on the current topic. Towards the end of the year students will sit papers in biology, chemistry and physics. This is to begin to prepare | evaluation of models (lock and key for enzymes) | digital copy of the biology, chemistry and physics textbooks used at KS4 Image: Comparison of the biology, chemistry and physics Image: Comparison of the biology, chemistry and physics |
| Chemistry 3 | Structure and bonding in chemistry. | Ionic, covalent and metallic bonding. Giant structures Fullerenes and | students for the linear exam based terminal assessment they will encounter at GCSE. | Literacy: reading newspaper/scientific articles to extract evidence and draw balanced conclusions. | workbooks are available such as those from CPG and these can be helpful in supporting student learning. As this is a new specification many resources are still being developed. https://www.cgpbooks.co.uk/ |
| | fullerenes? | graphene | | conversions | |



| Physics 3 | What is energy? How can we model how energy behaves and quantify energy mathematically? How is thermal energy transferred? | The energy store and energy transfer model. Calculation of energy stores (potential, kinetic, elastic). Efficiency of energy transfer and power. Energy transfer by conduction and radiation. Insulation of homes as an example of | Working grades will be reported as a running average showing how students have been performing in all assessments thus far. Individual grades will be reported for each of the sciences | Thinking Skills: Implications of new technology. Ideas around benefit and risk. Literacy: Extracting mathematical information from written texts – selecting appropriate equations. Numeracy: Range of calculations to learn and apply. Conversion of units. Thinking Skills: How scientists use models even if the models are limited. | Useful websites to support learning. BBC KS4 science <u>http://www.bbc.co.uk/education/subjects/zrkw2hv</u> Please note this material is no longer exam board specific. |
|-----------|---|---|--|--|---|
| | | an example of controlling heat transfer. | | | |



| Biology 4 | How are | Structure and function of | Literacy: Extracting |
|-----------|--------------|---------------------------|--|
| | transport | blood. | information from complex texts |
| | systems | | – subject specific vocabulary. |
| | organised in | The human circulatory | |
| | animals and | and gas exchange | Numeracy: Data |
| | plants? | systems. Relating | interpretation, calculating % |
| | | structure to function. | change, rate of gas/water |
| | | | uptake. |
| | What is a | Diseases of the heart | |
| | communicable | and treatments. | Thinking Skills: Cause and |
| | disease? | | correlation. Evaluating the |
| | | Plant organs (leaf, root, | strength of scientific evidence. |
| | | stem) – mass transport | Recognising questions relating |
| | | system in plants. Role | to relative values and |
| | | of specialised tissues in | importance that science can't |
| | | plants. | answer directly. |
| | | | |
| | | What is a pathogen? | |
| | | | |
| | | What diseases are | |
| | | caused by viruses and | |
| | | bacterial? | |
| | | | |
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| Chemistry 4 | Chemical calculations Chemical changes | Calculation of relative atomic mass. Equations and calculations Reactivity series Displacement reactions Acids and salts | Literacy: Scientific vocabulary associated with scientific method. Numeracy: Chemical calculations, rearranging formula. Ratios Thinking Skills: Interpreting experimental data – reactivity series. | |
|-------------|--|--|---|--|
| Physics 4 | What sources of energy are used to generate electricity? How does electricity behave in circuits? | Renewable and non- renewable energy resources. Trends in energy usage. Issues underlying all energy choices. The relationship between voltage, current and resistance. | Literacy: Study of information on energy supply and demand. Considering bias in information (oil industry/environmental groups). Numeracy: Calculations of voltage/current and resistance. Thinking Skills: Use of models | |



| Biology 5 | How can communicable disease be prevented? What are non- communicable diseases? | Role of medicine – antibiotics, vaccination Drug discovery Cancer Disease linked to lifestyle choices (smoking, alcohol, exercise). | Literacy: Reading to extract information – historical accounts of drug discovery Numeracy: Disease data Thinking Skills: Ethical issues, considering how different people can come to different conclusions when presented with the same choices or information (vaccination). |
|-------------|---|--|--|
| Chemistry 5 | What is electrolysis? | Principles of electrolysis Extraction of aluminium | Literacy: Writing equations and half equations. Accuracy and presentation of scientific formula. Numeracy: Balancing equations and half equations. Thinking Skills: Synoptic links to earlier work on structure and bonding and the formation of ions. |



| Physics 5 | How is electricity used | Alternating current, electrical supply and | Literacy: Scientific vocabulary |
|-----------|---|---|--|
| | in the home? | appliances. | Numeracy: Power equations and efficiency. Density |
| | | Relationship between current, power and | equations. |
| | | voltage | Thinking Skills: Models – Brownian motion. Abstract |
| | Extending the particle model of matter. | Density and change of state. Internal energy and pressure. Latent heat. | concepts. |
| | | Gas pressure and volume. | |