



# All Saints' Catholic High School

**Luceat lux Vestra**

**Subject: Biology and Trilogy**

**Stage: KS4**

NB:

- Bold indicates separate science Biology content only
- Topics vary in length and may be delivered over multiple half terms, please see curriculum maps.
- ‘Organisation’ has been delivered to year 10 last year
- Future year groups will begin ‘Energy’ in year 10

| <b>KS4:<br/>Yr 10 &amp; 11</b> | <b>4.1 Cell Biology</b>  | <b>4.2 Organisation</b>   | <b>4.3 Infection &amp; Response</b>   | <b>4.4 Bioenergetics</b>   | <b>4.5 Homeostasis and Response</b>   | <b>4.6 Inheritance, variation and evolution</b>  | <b>4.7 Ecology</b>   |
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| <b>Yr 9</b>                    | <i>Year 9 half - term 3</i>  |   |   |  |   |  |  |
| <b>Yr 10</b>                   |  |   | <i>Yr 10 unit 1</i>   | <i>Yr 10 unit 2</i>  | <i>Yr 10 unit 3</i>   | <i>Year 10 unit 4</i>  |  |
| <b>Yr 11</b>                   |  |   |   |  |   | <i>Year 11 unit 1</i>  | <i>Year 11 unit 2</i>  |
| <b>Aim of Unit</b>             | The aim of this topic is to build on the Organisms- Cells topic from KS3 and further develop the | The aim of this topic is to build on the Organisms- Breathing and Digestion topics from | The aim of this topic is to build on knowledge from KS3 and further develop the knowledge and understanding | The aim of this topic is to build on the topic Ecosystems from KS3 and further develop the knowledge | The aim of this topic is to build on knowledge from KS3 and further develop the | The aim of this topic is to build on the Evolution and Inheritance topics from KS3 and | The aim of this topic is to build on the Ecosystems topic from KS3 and further develop the |

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|   | knowledge and understanding around cells in organisms. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | KS3 and further develop the knowledge and understanding around Organisation. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | of our body's immune-response. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | and understanding around Respiration and Photosynthesis. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | knowledge and understanding around our body's response to internal and external changes. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | further develop the knowledge and understanding around how evolution takes place, how we inherit characteristics and how variation occurs. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. | knowledge and understanding around interdependence between humans and other organisms. It will also prepare pupils for the required disciplinary knowledge through the required practical activities. |
| <b>Composite Knowledge</b><br><i>(a task that requires several building blocks or components)</i> | Pupils will extend their understanding of key points and applications relating to Cells.  | Pupils will extend their understanding of key points and applications relating to Organisation.   | Pupils will extend their understanding of key points and applications relating to Infection and Response.                                     | Pupils will extend their understanding of key points and applications relating to Bioenergetics.  | Pupils will extend their understanding of key points and applications relating to Homeostasis and Response.   | Pupils will extend their understanding of key points and applications relating to Inheritance, Variation and Evolution.   | Pupils will extend their understanding of key points and applications relating to Ecology   |
| <b>Component Knowledge</b><br><i>(the building blocks that</i>                                    | 4.1.1.1 Eukaryotes and prokaryotes  | 4.2.1 Principles of organisation  | 4.3.1.1 Communicable (infectious) diseases  | 4.4.1.1 Photosynthetic reaction   | 4.5.1 Homeostasis<br>4.5.2 The human  | 4.6.1.1 Sexual and asexual reproduction<br>4.6.1.2 Meiosis  | 4.7.1.1 Communities<br>4.7.1.2 Abiotic factors  |

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| <i>together, when known, allow successful performance of a complex task)</i> | <p>4.1.1.2 Animal and plant cells</p> <p>4.1.1.3 Cell specialisation</p> <p>4.1.1.4 Cell differentiation</p> <p>4.1.1.5 Microscopy</p> <p><b>4.1.1.6 Culturing microorganisms</b> (separates only)</p> <p>4.1.2.1 Chromosomes</p> <p>4.1.2.2 Mitosis and the cell cycle</p> <p>4.1.2.3 Stem cells</p> <p>4.1.3.1 Diffusion</p> <p>4.1.3.2 Osmosis</p> <p>4.1.3.3 Active transport</p> | <p>4.2.2.1 The human digestive system</p> <p>4.2.2.2 The heart and blood vessels</p> <p>4.2.2.3 Blood</p> <p>4.2.2.4 Coronary heart disease: a non-communicable disease</p> <p>4.2.2.5 Health issues</p> <p>4.2.2.6 The effect of lifestyle on some non-communicable diseases</p> <p>4.2.2.7 Cancer</p> <p>4.2.3.2 Plant organ system</p> <p>4.2.3.1 Plant tissues</p> <p>4.2.3.2 Plant organ system</p> | <p>4.3.1.2 Viral diseases</p> <p>4.3.1.3 Bacterial diseases</p> <p>4.3.1.4 Fungal diseases</p> <p>4.3.1.5 Protist diseases</p> <p>4.3.1.6 Human defence systems</p> <p>4.3.1.7 Vaccination</p> <p>4.3.1.8 Antibiotics and painkillers</p> <p>4.3.1.9 Discovery and development of drugs</p> <p><b>4.3.2.1 Producing monoclonal antibodies (HT only)</b></p> <p><b>4.3.2.2 Uses of monoclonal antibodies (HT only)</b></p> <p><b>4.3.3 Plant disease (biology only)</b></p> <p><b>4.3.3.1 Detection and identification of plant diseases</b></p> | <p>4.4.1.2 Rate of photosynthesis</p> <p>4.4.2.1 Aerobic and anaerobic respiration</p> <p>4.4.2.2 Response to exercise</p> <p>4.4.2.3 Metabolism</p> | <p>nervous system 4.5.2.1</p> <p>Structure and function</p> <p><b>4.5.2.2 The brain</b></p> <p><b>4.5.2.3 The eye</b></p> <p><b>4.5.2.4 Control of body temperature</b></p> <p>4.5.3.1 Human endocrine system</p> <p>4.5.3.2 Control of blood glucose concentration</p> <p><b>4.5.3.3 Maintaining water and nitrogen balance in the body</b></p> <p>4.5.3.4 Hormones in human reproduction</p> <p>4.5.3.5 Contraception</p> <p>4.5.3.6 The use of hormones to treat infertility (HT only)</p> | <p><b>4.6.1.3 Advantages and disadvantages of sexual and asexual reproduction</b></p> <p>4.6.1.4 DNA and the genome</p> <p><b>4.6.1.5 DNA structure</b></p> <p>4.6.1.6 Genetic inheritance</p> <p>4.6.1.7 Inherited disorders</p> <p>4.6.1.8 Sex determination</p> <p>4.6.2.1 Variation</p> <p>4.6.2.2 Evolution</p> <p>4.6.2.3 Selective breeding</p> <p>4.6.2.4 Genetic engineering</p> <p><b>4.6.2.5 Cloning</b></p> <p><b>4.6.3.1 Theory of evolution (biology only)</b></p> <p><b>4.6.3.2 Speciation</b></p> | <p>4.7.1.3 Biotic factors</p> <p>4.7.1.4 Adaptations</p> <p>4.7.2.1 Levels of organisation</p> <p>4.7.2.1 Required practical 9: Field investigations</p> <p>4.7.2.2 How materials are cycled</p> <p>4.7.2.3 Decomposition</p> <p><b>4.7.2.3 Required practical 10: Decay</b></p> <p><b>4.7.2.4 Impact of environmental change (HT only)</b></p> <p>4.7.3.1 Biodiversity</p> <p>4.7.3.2 Waste management</p> <p>4.7.3.3 Land use</p> <p>4.7.3.4 Deforestation</p> <p>4.7.3.5 Global warming</p> <p>4.7.3.6 Maintaining biodiversity</p> |
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|   |   |   | <b>4.3.3.2 Plant defence responses</b>  |   | 4.5.3.7 Negative feedback (HT only) 4.5.4 Plant hormones<br><b>4.5.4.1 Control and coordination</b><br><b>4.5.4.2 Use of plant hormones (HT only)</b>  | <b>4.6.3.3 The understanding of genetics</b><br>4.6.3.4 Evidence for evolution<br>4.6.3.5 Fossils<br>4.6.3.6 Extinction<br>4.6.3.7 Resistant bacteria<br>4.6.4 Classification of living organisms                                       | <b>4.7.4.1 Trophic levels</b><br><b>4.7.4.2 Pyramids of biomass</b><br><b>4.7.4.3 Transfer of biomass</b><br><b>4.7.5.1 Factors affecting food security</b><br><b>4.7.5.2 Farming techniques</b><br><b>4.7.5.3 Sustainable fisheries</b><br><b>4.7.5.4 Role of biotechnology</b> |
| <b>Rationale (why?):</b><br><b>Links to prior &amp; future learning</b> | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Cell'. It offers opportunities to explore Stem careers in Cell biology. | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Organisms'-exchange substances with their environment. It offers opportunities to explore Stem careers in | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Cells'. It offers opportunities to explore Stem careers in Virology and Immunology. | Builds on KS3 in Ecosystems 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Energy transfers in and between organisms'. It also offers opportunities to explore Stem careers such as Physiotherapy. | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Organisms respond to their environment'. It offers opportunities to explore Stem careers | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'The control of gene' expression. It offers opportunities to explore Stem careers in climate change and Zoology. | Builds on KS3 in Organisation 1 and 2. This unit prepares pupils for continuing energy at KS5 in A level units such as 'Genetics populations, evolutions and ecosystems'. It offers opportunities to explore Stem careers in genetics and fertility.                             |

