**SUBJECT Biology Pupil learning journey** **Key Stage 4**

| | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
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| **Year 10**<br><br>Topic | B1 Key concepts<br>B3 Genetics<br>B2 Cells and control | B2 Cells and control<br>B3 Genetics | B4 Natural selection and modification | B5 Health, Disease & the Development of medicines | B5 Health, Disease & the Development of medicines | B2 Cells and control |
| **I am learning about:** | cells as the basic structural unit of all organisms<br><br>cells as the basic structural unit of all organisms; adaptations of cells related to their functions; the main sub-cellular structures of eukaryotic and prokaryotic cells<br><br>stem cells in animals and meristems in plants | nucleic acids as key biological molecules and the genome as the entire genetic material of an organism<br><br>how the genome, and its interaction with the environment, influence the development of the phenotype of an organism<br><br>the potential impact of genomics on medicine<br><br>single gene inheritance and single gene crosses with dominant and recessive phenotypes | the process of natural selection leading to evolution<br><br>the evidence for evolution<br><br>developments in biology affecting classification<br><br>the importance of selective breeding of plants and animals in agriculture<br><br>the uses of modern biotechnology including gene technology; some of the practical and ethical considerations of modern biotechnology | the relationship between health and disease<br><br>communicable diseases including sexually transmitted infections in humans (including HIV/AIDs)<br>non-communicable diseases<br><br>bacteria, viruses and fungi as pathogens in animals and plants<br><br>body defences against | pathogens and the role of the immune system against disease<br><br>reducing and preventing the spread of infectious diseases in animals and plants<br>the process of discovery and development of new medicines<br><br>the impact of lifestyle factors on the incidence of non-communicable diseases. | principles of nervous coordination and control in humans<br><br>the relationship between the structure and function of the human nervous system<br><br>the relationship between structure and function in a reflex arc |

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| | | sex determination in humans<br><br>genetic variation in populations of a species | | | | |
| **Assessment** | Literacy Assessed Task - The cell cycle and mitosis | Literacy Assessed Task - Path of a nerve impulse<br>A1 Assessment | Numeracy Assessed Task<br>– Adaptations of sperm and egg<br>Numeracy Assessed Task<br>- Inheritance: Punnet squares<br>A2 Assessment | Literacy Assessed Task - Pedigree tree analysis | Literacy Assessed Task - Selective breeding | Literacy Assessed Task<br>- Factors affecting rate of reaction: pH and temperature<br>A3 Assessment |
| **Year 11**<br><br>**Topic** | B8 Exchange and transport in animals | B8 Exchange and transport in animals | B7 Animal co-ordination, control and homeostasis | B6 Plant structures and their functions<br>B9 Ecosystems and material cycles | B9 Ecosystems and material cycles | |
| **I am learning about:** | the importance of cellular respiration; the processes of aerobic and anaerobic respiration<br><br>the need for transport systems in multicellular organisms, including plants | the relationship between the structure and functions of the human circulatory system | principles of hormonal coordination and control in humans<br><br>hormones in human reproduction, hormonal and non-hormonal methods of contraception<br><br>homeostasis. | photosynthesis as the key process for food production and therefore biomass for life<br><br>the process of photosynthesis<br><br>factors affecting the rate of photosynthesis.<br><br>levels of organisation | the role of microorganisms (decomposers) in the cycling of materials through an ecosystem<br><br>organisms are interdependent and are adapted to their environment<br><br>the importance of biodiversity<br><br>methods of identifying species and measuring | |

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| | | | | within an ecosystem<br><br>some abiotic and biotic factors which affect communities; the importance of interactions between organisms<br><br>how materials cycle through abiotic and biotic components of ecosystems | distribution, frequency and abundance of species within a habitat<br><br>positive and negative human interactions with ecosystems. | |
| **Assessment** | Numeracy – Calculate SA to Volume ratio<br>Numeracy - Cardiac output<br>A1 Assessment | A2 Assessment<br>PPE | Literacy – Thyroid and BMI<br>Literacy - Type 1 and Type 2 diabetes | Working Scientifically - Rate of photosynthesis<br><br>Numeracy - Transpiration and factors affecting its rate<br>A3 Assessment | Numeracy – Core practical – Sampling<br>Literacy - Interdependence<br>Literacy - Decay/Nitrogen Cycle | |