Key Stage 4 Curriculum Map - Biology

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Year 10	(Cells) Key Learning Objectives: 1. Compare the structure of eukaryotic cells and prokaryotic cells. 2. Describe the structure of plant and animal cells with reference to the different organelles and their functions. 3. Describe how different plant and animal cells are adapted for their function. 4. Explain the importance of cell differentiation and how it affects plants and animals at different stages of the life cycle. 5. Understand how technology in microscopy has changed over time and identify limiting factors of light and electron microscopes. 6. Calculate the magnification of a microscope and apply measurements to observations. 7. Understand that DNA is stored in pairs of chromosomes. 8. Explain the process of mitosis and its role in the cell cycle. 9. Understand the properties of stem cells and their importance in modern medicines	(Transport in Cells) Key Learning Objectives: 1. Describe diffusion and the factors that can affect the rate of diffusion across a membrane. 2. Explain how different cells/organisms are adapted to facilitate diffusion. 3. Describe what is meant by osmosis. 4. Explain how substances can be moved across a membrane against the concentration gradient through active transport.	(Organisation) Key Learning Objectives: 1. Understand the scale and size in comparing cells, tissues,organs and organ systems. 2. Understand the organs and processes that occur within the digestive system and the types of molecules and cells involved. 3. Understand the organs and processes within the circulatory system and the types of cells involved. 4. Understand the effects on the body when things go wrong; CHD, Cancer, Diabetes etc. 5. Understand how cells, tissues, organs and systems are structured within plants.	(Infection and response) Key Learning Objectives: 1. Understand how diseases can be transmitted and spread and suggest ways to reduce transmission. 2. Explain the effects of diseases on the body with reference to cell damage, toxins etc. 3. Understand the life cycle of a virus (Specifically HIV/AIDS & TMV) 4. Describe some fungal, bacterial and protist diseases with reference to their transmission, symptoms and preventatives. 5. Understand how the body is able to respond to infection. 6. Understand the role of vaccinations and drugs at preventing and treating diseases. 7. Understand the process of developing new drugs and the history of drug research.	(Bioenergetics) Key Learning Objectives: 1. Understand how the rate of photosynthesis can be affected by environmental factors and, measured. 2. Describe the reaction of photosynthesis in reference to products, reactants and energy changes. 3. Understand what happens to the glucose produced through photosynthesis. 4. Understand the importance of respiration and compare aerobic respiration to anaerobic respiration in animals and yeast. 5. Explain the impact of exercise on the body. 6. Understand what is meant by metabolism and what it includes.	(Homeostasis and Response) Key Learning Objectives: 1. Understand the importance of homeostasis on the body and what is involved in controlling the different body properties 2. Understand how the nervous system is structured and how it works to respond to the environment. 3. Understand how the endocrine system is structured and how it responds to the environment. 4. Understand how blood glucose concentrations are controlled. 5. Understand the role of hormones in the reproductive system and human reproduction. 6. Understand different methods of contraception and how hormones can be used to control fertility. 7. Understand how negative feedback controls hormone levels in the body.
	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC

Year 11	(Inheritance, Variation and Evolution) Key Learning Objectives: 1. Understand the differences between sexual and asexual reproduction in plants and animals. 2. Understand the process of meiosis and how it is different from mitosis. 3. Understand the structure of DNA in eukaryotes and how this has been studied. 4. Explain how DNA expresses characteristics and how these are inherited. 5. Understand how genetics can determine sex and inherited diseases	Key Learning Objectives: 1. Explain what causes variation within a population and why they are important. 2. Understand Darwin's theory of natural selection and the evidence there is to support it. 3. Explain how selective breeding and genetic engineering can change the characteristics of organisms. 4. Understand how organisms are classified and how technology has changed how we classify organisms.	(Ecology) Key Learning Objectives: 1. Understand the factors in an environment, how organisms are adapted to these factors and how different organisms are interacting. 2. Understand the difference between biotic and abiotic factors and be able to list examples of each 3. Understand the different trophic levels within an ecosystem and how these relationships can be shown through food chains and webs	Key Learning Objectives: 4. Understand how carbon and water are cycled in the environment. 5. Understand the negative human impact on ecosystems including their effect on Biodiversity, the climate, deforestation, land use and waste management. 6. Understand how conservation and other techniques are having a positive impact on the environment.	Key Learning Objectives:	Key Learning Objectives:
	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC	Key Assessment: Practical: Written: TBC