

	Autumn Term	Spring Term	Summer Term
Topic	5 – Homeostasis and Response	7 - Ecology	4 – Bioenergetics
	<ul style="list-style-type: none"> Understand that cells in the body can only survive within narrow physical and chemical limits. They require a constant temperature and pH as well as a constant supply of dissolved food and water. In order to do this the body requires control systems that constantly monitor and adjust the composition of the blood and tissues. Understand that these control systems include receptors which sense changes and effectors that bring about changes. Understand the structure and function of the nervous system and how it can bring about fast responses. Understand hormonal system which usually brings about much slower changes. Hormonal coordination is particularly important in reproduction since it controls the menstrual cycle. An understanding of the role of hormones in reproduction has allowed scientists to develop not only contraceptive drugs but also drugs which can increase fertility. 	<ul style="list-style-type: none"> Understand that the Sun is a source of energy that passes through ecosystems. Understand that materials including carbon and water are continually recycled by the living world, being released through respiration of animals, plants and decomposing microorganisms and taken up by plants in photosynthesis. Understand that all species live in ecosystems composed of complex communities of animals and plants dependent on each other and that are adapted to particular conditions, both abiotic and biotic. These ecosystems provide essential services that support human life and continued development. Understand that humans need to engage with the environment in a sustainable way and how humans are threatening biodiversity as well as the natural systems that support it. Understand the actions we need to take to ensure our future health, prosperity and well-being. 	<ul style="list-style-type: none"> Understand how plants harness the Sun's energy in photosynthesis in order to make food. This process liberates oxygen which has built up over millions of years in the Earth's atmosphere. Understand that both animals and plants use this oxygen to oxidise food in a process called aerobic respiration which transfers the energy that the organism needs to perform its functions. Conversely, anaerobic respiration does not require oxygen to transfer energy. Understand that during vigorous exercise the human body is unable to supply the cells with sufficient oxygen and it switches to anaerobic respiration. This process will supply energy but also causes the build-up of lactic acid in muscles which causes fatigue.
	<p>Topic 6 – Inheritance, Variation and Evolution</p> <ul style="list-style-type: none"> Understand how the number of chromosomes is halved during meiosis and then combined with new genes from the sexual partner to produce unique offspring. Understand that gene mutations occur continuously and on rare occasions can affect the functioning of the animal or plant. These mutations may be damaging and lead to a number of genetic disorders or death. Very rarely a new mutation can be beneficial and 		<p>Recap, recall, revise</p> <p>Preparation for Summer 2021 exams – Y11</p>

	<p>consequently, lead to increased fitness in the individual.</p> <ul style="list-style-type: none"> • Understand that variation generated by mutations and sexual reproduction is the basis for natural selection; this is how species evolve. • Understanding of how these processes has allowed scientists to intervene through selective breeding to produce livestock with favoured characteristics. Once new varieties of plants or animals have been produced it is possible to clone individuals to produce larger numbers of identical individuals all carrying the favourable characteristic. • Understand that scientists have now discovered how to take genes from one species and introduce them in to the genome of another by a process called genetic engineering. In spite of the huge potential benefits that this technology can offer, genetic modification still remains highly controversial. 		
Vocabulary	<p>Topic 5 - Homeostasis, stimuli, negative feedback, receptors, optimum, neurone, effector, muscle, gland, synapse, impulse, reflexes, reflex arc, cerebral cortex, cerebellum, medulla, accommodation, myopia, hyperopia, endocrine, hormone, diabetes, reabsorption, urea, dialysis, rejection, menstruation, ovulation, oestrogen, progesterone, contraceptive, fertility, IVF, auxin, phototropism, gravitropism,</p> <p>Topic 6 – Chromosome, DNA, gene, genome, double helix, nucleotide, mutation, sexual reproduction, gamete, fertilisation, asexual reproduction, meiosis, alleles, homozygous, heterozygous, dominant, recessive, inheritance, variation, extinction, speciation, cloning, fossil, classification</p>	<p>Topic 7 – Habitat, population, community, abiotic, biotic, ecosystem, interdependence, adaptation, producer, consumer, food chain, ecosystem, predator, prey, transect, decay, biodiversity, environment, global warming, climate change, migration, deforestation, tropic level, biotechnology, genetically modified,</p>	<p>Topic 4 – Photosynthesis, chloroplasts, chlorophyll, respiration, limiting factor, aerobic respiration, anaerobic respiration, fermentation, lactic acid, exercise, metabolism,</p>
Links to KS3 Curriculum	<p>Topic 5 – None</p> <p>Topic 6</p> <p>Understand reproduction in humans (as an example of a mammal), including the structure and function of the</p>	<p>Topic 7</p> <p>Understand the dependence of almost all life on Earth on the ability of photosynthetic organisms, such as plants and algae, to use sunlight in photosynthesis to</p>	<p>Topic 4</p> <p>Understand the reactants in, and products of, photosynthesis, and a word summary for</p>

	<p>male and female reproductive systems, menstrual cycle (without details of hormones), gametes, fertilisation, gestation and birth, to include the effect of maternal lifestyle on the foetus through the placenta.</p> <p>Understanding of heredity as the process by which genetic information is transmitted from one generation to the next.</p> <p>Understand a simple model of chromosomes, genes and DNA in heredity, including the part played by Watson, Crick, Wilkins and Franklin in the development of the DNA model.</p> <p>Understand the differences between species and the variation between individuals within a species as being continuous or discontinuous, to include measurement and graphical representation of variation.</p> <p>Understanding that the variation between species and between individuals of the same species meaning some organisms compete more successfully, which can drive natural selection.</p> <p>Understand that changes in the environment which may leave individuals within a species, and some entire species, less well adapted to compete successfully and reproduce, which in turn may lead to extinction.</p> <p>Understanding of the importance of maintaining biodiversity and the use of gene banks to preserve hereditary material.</p>	<p>build organic molecules that are an essential energy store and to maintain levels of oxygen and carbon dioxide in the atmosphere.</p> <p>Understand the interdependence of organisms in an ecosystem, including food webs and insect pollinated crops</p> <p>Understand the importance of plant reproduction through insect pollination in human food security and how organisms affect, and are affected by, their environment, including the accumulation of toxic material.</p>	<p>photosynthesis and the adaptations of leaves for photosynthesis.</p> <p>Understand that aerobic and anaerobic respiration in living organisms, including the breakdown of organic molecules to enable all the other chemical processes necessary for life. Be able to write a word summary for aerobic respiration.</p> <p>Understand the process of anaerobic respiration in humans and micro-organisms, including fermentation, and a word summary for anaerobic respiration.</p> <p>Understand the differences between aerobic and anaerobic respiration in terms of the reactants, the products formed and the implications for the organism.</p>
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