



Year 10 Biology Curriculum Summary



YEAR GROUP:10

SUBJECTS: Biology

When?	Knowledge	Understanding	Assessment
<p>Organising Animals and Plants</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Describe the structure and functions of the different components of blood, the different blood vessels and the heart. Evaluate the different methods used in the treatment of heart problems. Describe the structure and function of the human gas exchange system Describe the structure and function of the xylem and phloem. Explain in detail how stomata control transpiration and the factors which affect transpiration. 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Organising Animals and Plants key vocabulary:</p> <p>aorta arteries atria capillaries coronary arteries double circulatory system epidermal guard cells haemoglobin palisade mesophyll phloem plasma platelets pulmonary artery pulmonary vein red blood cells spongy mesophyll statins stent translocation transpiration urea</p>	<p>Assessment:</p> <p>Organising Animals and Plants Assessment</p>



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		veins vena cava ventricles white blood cells xylem	
Communicable Diseases	Will be able to: <ul style="list-style-type: none"> Describe the symptoms of diseases which are caused different pathogens (viruses, fungi, bacteria and protists). Explain how pathogens are spread. Describe methods of preventing the spread of diseases Explain the human bodies defence system against disease. 	Students will carry out a range of practical experiments during these topics. Communicable Diseases key vocabulary: agar gel aphids binary fission chlorosis communicable (infectious) disease culture medium inoculate microorganisms mutation non-communicable diseases pathogens sexually transmitted disease (STD) vaccine virus	<p style="text-align: center;">Assessment:</p> <p style="text-align: center;">FMS - – Diseases Assessment LETCH Communicable Diseases Assessment</p>
Preventing and Treating	Will be able to: <ul style="list-style-type: none"> Describe and explain in 	Students will carry out a range of practical experiments during these topics.	



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Diseases	detail how vaccinations protect against disease. <ul style="list-style-type: none"> • Compare how antibiotics and painkillers aid in the treatment of disease. • Describe and explain how different drugs were discovered. • Specify the different stages involved in drug testing and explain the importance of drug testing. 	Preventing and Treating Diseases key vocabulary: clinical trials hybridomas placebo preclinical testing vaccine	Assessment: FMS -Diseases Assessment LETCH –Treating Diseases Assessment
Non Communicable Diseases	Will be able to: <ul style="list-style-type: none"> • Differentiate between a correlation and causation • Compare benign and malignant tumours • Describe and explain how certain factors such as smoking obesity, diet etc. increases your chances of developing certain non-communicable diseases 	Students will carry out a range of practical experiments during these topics. Non Communicable Diseases key vocabulary: benign tumours cancer carcinogens causal mechanism correlation ionising radiation malignant tumours tumour	Assessment: FMS - Diseases Assessment LETCH –Treating Diseases Assessment
Photosynthesis	Will be able to: <ul style="list-style-type: none"> • Describe what is meant by photosynthesis 	Students will carry out a range of practical experiments during these topics. Photosynthesis key vocabulary:	



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	<ul style="list-style-type: none"> Describe and explain the factors which affect the rate of photosynthesis and how people use this knowledge to manipulate the growth of plants Carry out a practical to investigate the effect of light intensity on the rate of photosynthesis. State how plants use the glucose they produce during photosynthesis 	endothermic reaction glucose limiting factors photosynthesis	<p>Assessment: Bioenergetics Assessment</p>
<p>Respiration</p>	Will be able to: <ul style="list-style-type: none"> Compare aerobic and anaerobic respiration Describe and explain how the body responds to the increased energy demands during exercise. Describe the role of the liver with a focus on its involvement in oxygen debt. 	Students will carry out a range of practical experiments during these topics. Respiration key vocabulary: aerobic respiration anaerobic respiration endothermic reaction exothermic reaction glycogen lactic acid oxygen debt	<p>Assessment: Bioenergetics Assessment</p>
<p>The Human Nervous</p>	Will be able to:	Students will carry out a range of practical experiments during these topics.	<p>Assessment:</p>



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<p>System</p>	<ul style="list-style-type: none"> Explain the importance of homeostasis Describe the structure and function of the different parts of the human nervous system. Describe and explain how reflexes work and their importance. Carry out a practical to measure reaction times. 	<p>The Human Nervous System key vocabulary: central nervous system (CNS) cerebral cortex cerebellum ciliary muscles coordination centres effectors homeostasis hyperopia medulla motor neurones myopia nerve neurones receptors reflex arcs reflexes sensory neurone stimuli suspensory ligaments</p>	<p>Biological Response Assessment</p>
<p>Hormonal Coordination</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Describe the role of the glands and hormones which make up the human endocrine systems. Describe how glucagon 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Hormonal Coordination key vocabulary: ADH adrenaline auxin contraception</p>	<p>Assessment:</p>



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	<p>and insulin interact to control blood glucose levels</p> <ul style="list-style-type: none"> • Compare type 1 and type 2 diabetes. • Describe the important role of negative feedback in hormonal control. • Describe and explain the importance of hormonal coordination in reproduction and their role in the menstrual cycle, contraception and fertility treatments 	<p>endocrine system follicle stimulating hormone (FSH) gibberellins glucagon gravitropism hormones insulin oestrogen ovaries ovulation phototropism pituitary gland testosterone tropism type 1 diabetes type 2 diabetes</p>	<p>Biological Response Assessment</p>
<p>B13 Reproduction</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> • Compare sexual and asexual reproduction • Describe meiosis and explain its role in genetic variation • Describe what is meant by dominant and 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Reproduction key vocabulary: alleles asexual reproduction bases (DNA) carriers cystic fibrosis</p>	<p>Assessment: FMS – Genetics and Reproduction Assessment</p>



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	<p>recessive alleles and use punnet squares to predict what alleles an organisms will inherit.</p> <ul style="list-style-type: none"> Describe human genetic disorders and how embryos can be screened for these disorders. 	<p>dominant allele genetic engineering genotype heterozygote homozygote meiosis mutation natural selection nucleotide phenotype polydactyly Punnett square diagram recessive sex chromosomes sexual reproduction</p>	<p>LETCH –B12 Reproduction Assessment</p>
<p>Variation and Evolution (FMS)</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Explain what causes variation in a population Describe and explain how natural selection work and how this ensures that only the best adapted organisms will survive. Describe what is meant by selective breeding and 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Variation and Evolution (FMS) key vocabulary: mutation natural selection selective breeding tissue culture</p>	



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	<p>the risks and benefits of selective breeding.</p> <ul style="list-style-type: none"> Describe how organisms can be genetically engineered and the potential benefits and risks involved in genetic engineering. 		<p>Assessment: Genetics and Reproduction Assessment</p>
<p>Genetics and Evolution (FMS)</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Describe the process by which fossils are formed. Describe how we can use the fossil record to reveal how organisms have evolved and to reveal how organism can go extinct. Explain the role which mutation plays in the development of antibiotic resistant bacteria and how people can reduce antibiotic resistance. Use the Linnaeus system, the Three Domain system and evolutionary trees to classify organisms. 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>B15 Genetics and Evolution (FMS) key vocabulary: archaea classification domain evolutionary trees extinction speciation species</p>	<p>Assessment: Genetics and Reproduction Assessment</p>



When?	Knowledge	Understanding	Assessment
<p>adaptations, interdependence and competition (FMS)</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> • Explain how organisms in an ecosystem are interdependent. • Describe the abiotic and biotic factors that affect communities. • Carry out a practical to investigate the population size of a common species in a habitat. • Describe the things which animals and plants compete for and the ways which they have adapted to successfully compete. 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>adaptations, interdependence and competition (FMS) key vocabulary:</p> <p>abundance adaptations community competition distribution extremophile interdependence mean median mode quadrat quantitative sampling range sample size transect</p>	<p>Assessment: Ecology Assessment</p>



When?	Knowledge	Understanding	Assessment
<p>Organising an Ecosystem (FMS)</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Describe the main feeding relationships within a community. Describe the decay cycle, water cycle and carbon cycle and explain their importance in an ecosystem. 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Organising an Ecosystem (FMS) key vocabulary: biomass carbon cycle decomposers primary consumer producers secondary consumer</p>	<p>Assessment: Ecology Assessment</p>
<p>Biodiversity and Ecosystems (FMS)</p>	<p>Will be able to:</p> <ul style="list-style-type: none"> Explain what is meant by biodiversity and why it is important. Describe how human activities pollute the land, water and air. Describe what is meant by deforestation and its impact on biodiversity. Explain how global warming could affect life 	<p>Students will carry out a range of practical experiments during these topics.</p> <p>Biodiversity and Ecosystems (FMS) key vocabulary: acid rain biodiversity deforestation incident energy trophic level</p>	<p>Assessment: Ecology Assessment</p>



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	<p>on earth</p> <ul style="list-style-type: none">• Describe ways which humans are trying to maintain biodiversity.		