BENSHAM MANOR School

Year 11 GCSE Biology Curriculum Map 2026-27

The curriculum is designed for students to have fun and enjoy science lessons. The aim is for students to appreciate the value of science in their everyday lives. We want to help our young learners understand the world around them and make relevant connections. We encourage students to express their own thoughts and ideas, become curious learners; asking questions and developing independence and communication skills. We motivate students to reach their full potential by building on prior learning and skills, supporting and scaffolding their learning so they can achieve at all levels. Students are encouraged to address misconceptions, continue to develop and build upon the scientific skills and key scientific concepts they have developed from the KS3 curriculum and help them to prepare for the next steps after school and into adulthood.

Unit Title	Unit overview	Knowledge and Skills	Assessment	Key Words
Autumn Term - **1. Cell Biology**	Cell Biology In this Unit students look at how substances are transported in organisms.	• Diffusion, osmosis, active transport • Required practical - Investigating the effect of concentration of salt.	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	diffusion osmosis active transport reproducible Concentration gradient partially permeable membrane concentration gradient dependent variable anomalies independent variable dependent variable control variable repeatable valid accurate anomalous predict range fair test precise data
2) Tissues, Organs and Organ Systems part 1	Tissues Organs and Organ Systems Part 1. In this unit students will learn about the level of organisation in organisms from the smallest parts to the largest. Students will learn how different organ systems work together to carry out key functions. They will look closely at the respiratory, circulatory and digestive systems.	• Cell organisation • The Respiratory system • The circulatory system • Plant cell organisation • Transpiration and translocation • Transpiration and stomata	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	cell tissue organ system organism trachea bronchus bronchiole alveoli diaphragm gas exchange right atrium left atrium right ventricle capillaries pulmonary vein & artery pacemaker platelets veins plasma stomata epidermal tissue transpiration palisade mesophyll stents spongy mesophyll guard cells meristems tissue

				left ventricle valves aorta arteries
Unit Title	**Unit overview**	**Knowledge and Skills**	**Assessment**	**Key Words**
<u>Spring Term -</u> **2) Tissues, Organs and Organ Systems continued**	In this unit students will be introduced to non-communicable diseases and the treatment of these diseases. They will look closely at the digestive system.	● Health and disease - diseases ● Cardiovascular disease- What it is, how it affects health and how it can be treated. ● Risk factors for non-communicable disease ● Cancer -What it is and risk factors ● The digestive system -structure and function ● Enzymes- what they are and what they do. ● Required practical - Investigating the effect of pH on the rate of reaction of amylase. ● Required Practical - Food Tests - Using qualitative reagents to test for carbohydrates, lipids and proteins. ● Exchange surfaces and substances	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	risk factor communicable disease statins cardiovascular disease cancer oesophagus stomach liver gallbladder pancreas small intestines large intestines digestion enzymes active site substrate optimum gills biological catalysts biuret lipids denatured carbohydrase starch amylase Benedicts protease amino acids iodine lipase fatty acids alveoli glycerol bile ratio villi anomalies
3) Infection and response		● Viral disease ● Fungal and protist diseases ● Bacterial diseases ● Preventing disease ● Fighting disease - the body defences, vaccination and drugs. ● Antibiotic resistance ● Developing drugs ● Plant diseases and defences	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	communicable disease pathogen bacteria virus protist fungi vector measles HIV malaria tobacco mosaic virus salmonella Rose black spot gonorrhoea vaccination antitoxins immune system antibodies phagocytosis antigens MMR epidemic painkillers antibiotics mutate penicillin

				antibiotic resistance clinical trials preclinical trials placebo optimum dose blind trials double blind trials
Unit Title	**Unit overview**	**Knowledge and Skills**	**Assessment**	**Key Words**
<u>Spring Term -</u> **4) Bioenergetics**	In this unit we will explore how plants harness the Sun's energy in photosynthesis in order to make food. Students then explore the relationship between photosynthesis and respiration. Students also learn about anaerobic respiration and metabolism.	• Photosynthesis • How plants use glucose • The rate of photosynthesis and limiting factors • Required practical - investigating the effect of light intensity on the rate of photosynthesis. • Aerobic respiration • Anaerobic respiration • Exercise • Metabolism	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	bioenergetics chlorophyll photosynthesis chloroplasts endothermic exothermic word equation respiration symbol equation glucose cellulose amino acids lipids starch limiting factors mean random error range repeatable reproducible fair test precise independent variable accurate control variable respiration dependent variable anomalous aerobic predict valid precise precise anaerobic lactic acid oxygen debt metabolism recovery period fermentation
5) Homeostasis and Response	In this unit students will explore how the body controls and regulates the internal environment to ensure optimal conditions for metabolism. This will include regulating blood sugar level, temperature and water levels. Students will study the structures and functions of the nervous system and the endocrine system. Students then go on to study specific animal and plant hormones.	***<u>Homeostasis and Response</u>*** • The nervous system • Synapses and reflexes • Required practical - Investigating the effect of a factor on human reaction time. • The brain • The eye • correcting vision defects • controlling body temperature **<u>The endocrine Systems</u>** • Hormones • Controlling blood glucose • Controlling water content	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	homeostasis control system stimulus receptor effector negative feedback sensory neurone motor neurone relay neurone central nervous system response synapse reflex arc precise independent variable dependent variable human error control variable fair test cerebral cortex medulla cerebellum sclera cornea pupil iris retina lens ciliary muscle suspensory ligament

		• Kidney failure		optic nerve iris reflex radial muscle reflect circular muscle accommodation refracts hyperopia myopia thermoregulatory centre negative
Unit Title	**Unit overview**	**Knowledge and Skills**	**Assessment**	**Key Words**
<u>Spring Term</u> **5) Homeostasis and Response continued**		***<u>Animal and plant hormones</u>*** • Puberty and the menstrual cycle • Contraceptives • Plant hormones		feedback vasodilation insulin vasoconstriction hormones oestrogen endocrine system pituitary gland pancreas thyroid adrenal glands testosterone glycogen kidneys diabetes type 1 and 2 urine filtration follicle reabsorption dialysis stimulating hormone oestrogen luteinising hormone progesterone partially permeable membrane menstruation contraception auxin geotropism phototropism
<u>Summer Term -</u> **6) Inheritance and Evolution**	This unit aims to give students an understanding of how characteristics and genetic information are passed on from one generation to another. Students will look at how genetic variation is the basis for natural selection and evolution. Students will look at how humans use their knowledge of genetics to create specific breeds of animals and create useful products such as insulin and genetically modified crops.	***<u>DNA and Reproduction</u>*** • DNA • Reproduction • Meiosis ***<u>Genetics</u>*** • Sex chromosomes • Alleles and genetic diagrams • Inherited disorders • The work of Mendel ***<u>Evolution and Classification</u>*** • Variation • Evolution and extinction • Selective breeding • Genetic engineering • cloning • fossils • speciation and natural selection • antibiotic resistant bacteria	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	chromosome gene DNA double helix genome nucleotide base phosphate gamete sexual reproduction asexual reproduction meiosis genetic diagram phenotype genotype alleles recessive dominant homozygous heterozygous monohybrid cross cystic fibrosis polydactyly embryonic screening variation genes mutation evolution natural selection speciation extinction hypotheses selective breeding inbreeding genetic engineering cloning adult cell cloning surrogate fossils decay antibiotic resistance three-domain system

		• classification		binomial system evolutionary trees
Unit Title	**Unit overview**	**Knowledge and Skills**	**Assessment**	**Key Words**
Summer Term 7) Ecology	In this unit students study the main parts of an ecosystem looking at living and non-living factors. They learn about interaction between organisms and how they are interdependent upon one another. Students learn about how ecosystems provide essential services that support human life and continued development. In this unit students will explore how humans are threatening biodiversity as well as the natural systems that support it and why it is essential that we engage with the environment in a sustainable way.	***<u>Organisms and their environment</u>*** • Competition • Abiotic and biotic factors • Adaptations • Food chains • Using quadrats and transects • Required practical - Using sampling techniques to investigate the effect of a factor on distribution of a species • The cycling of materials and decay • Required practical - Investigating the effect of temperature on the rate of decay of milk by measuring changes in pH. ***<u>Humans impact on the environment</u>*** • Biodiversity and waste • Global warming • Deforestation and land use • Maintaining ecosystems and biodiversity ***<u>Biomass, food and biotechnology</u>*** • Pyramids of biomass and trophic levels • Food security and farming • Biotechnology	Teacher assessment through a variety of activities - quizzes, word wall, games, questioning, role play, speaking activities, modelling, card sorts, photographs of learners carrying out activities, storyboards, presentations/posters, evaluation sheets, past paper questions and testing.	competition habitat population abiotic community biotic ecosystem species food chain food web adaptations extremophiles biomass producer primary consumer secondary consumer tertiary consumer predator prey quadrat transect water cycle transpiration evaporation precipitation carbon cycle detritus feeders combustion respiration compost decay biogas batch generator continuous generator population biodiversity global warming greenhouse effect climate change migration deforestation protection programmes trophic levels pyramids of biomass efficiency mycoprotein plasmid ligase recombinant DNA genetically modified crops
Revision and Exams				