The Acorns School

Overview plans for academic year 2025-2026

Subject: **Biology** **Year group/cohort:** **Y10**

	Knowledge and Understanding	**Knowledge and Understanding**	**Skills**	**Skills**	**Assessment**	**Subject specific literacy**	**Cross curricular links**
	Components (Key concepts)	Composite (Bigger picture)	Components (Key concepts)	Composite (Bigger picture)	What is being assessed, how, and when?	Key Vocabulary	Including Personal Development and SMSC
Autumn Term 1	Identify and describe the key parts of a microscope and calculate magnification. Identify key parts of animal and plant cells and the functions of organelles. Describe the process of mitosis using keywords. Describe differences between embryonic and adult stem cells.	**Unit B1 Cell Biology**	To use a light microscope to observe, draw and label a selection of plant and animal cells. A magnification scale must be included.	**Required Practical Microscopy**	Formative assessment Microscopy calculations 6 mark question	Organelle Magnification Diffusion Osmosis Active Transport Mitochondria	Ethical discussions around the use of embryonic stem cells in research

	List some arguments for and against the use of stem cells. Explain the differences between diffusion, osmosis, and active transport		To investigate the effect of antiseptics or antibiotics on bacterial growth using agar plates and measuring zones of inhibition To investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue	**Required Practical Culturing Microorganisms** **Required Practical – Osmosis**	Formative assessment – Osmosis End of Topic Assessment		
Autumn Term 2	Give functions of cells, tissues, organs, organ systems and organisms using examples. Describe the structure and function of organs within the digestive system and the specific roles.	**B2 Organisation**	Use qualitative reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict's test	**Required Practical – Food Tests**	Formative assessment – Food Tests	Enzyme Vessel Non-communicable Benign Malignant	Discussion around health as wellbeing and the impact on the NHS.

	Describe the structure of specific molecules and how they can be broken down during digestion. Discuss the role of enzymes in digestion. Describe the structure and function of the circulatory system, including the heart and blood vessels. Discuss interventions of the heart and evaluate different methods. Describe the structure and function of the respiratory system including adaptations. Discuss causes of non-communicable disease and the risks associated. Describe how cancers can form.		for sugars; iodine test for starch; and Biuret reagent for protein. Students use a continuous sampling technique to determine the time taken to completely digest a starch solution at a range of pH values. Student dissect a heart to view chambers, valves, muscle, arteries and veins	**<u>Required Practical – Enzymes</u>** **<u>Practical – Heart Dissection</u>**	6 mark question Formative Assessment - Enzymes Formative Assessment – Coronary Heart Disease End of Topic Assessment		

Spring Term 1	Recall cell structure of prokaryotic and eukaryotic cells. Introduce disease causing • microorganisms such as virus, • protist, bacterial and fungi (pathogens). Investigate diseases caused by each pathogen that can cause harm to both plants and animals and their impact on organisms defences. Categorise diseases as communicable and noncommunicable giving examples of each. Investigate vaccinations and the discovery of medicinal drugs to treat illness, using this information to understand the social implications of antibiotic resistance.	**B3 Infection and Response**	Students have the opportunity to revisit learning aseptic technique Students have the opportunity to revisit learning – use of the microscope and microscope calculations	**Recall Aseptic Technique – Culturing Microorganisms** **Recall Use of Microscope**	6 Mark Question Formative Assessment – Immune System Formative Assessment – Herd Immunity	Antibiotic resistance Antibody Antigen Antitoxin Communicable disease Immunisation Phagocytosis Vaccination	This opportunity enables the incorporation of cultural capital through discussion of some great scientists from the past, such as Alexander Fleming, Ignaz Semmelweis and Louis Pasteur. They look at the work of these doctors and scientists and discuss why their work has been so important, a concept students may be familiar with the History

					End of Topic Assessment		curriculum and the development of medicine through time.
Spring Term 2	Recap the structures of a cell and their respective functions Include the plants uses for glucose Adaptation of the leaf to facilitate photosynthesis and factors that affect the rate of photosynthesis.	**B4 Bioenergetics**	Investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed.	**Required Practical - Photosynthesis**	Formative Assessment - Photosynthesis	Photosynthesis Synthesise Aerobic Respiration Anaerobic Respiration Fermentation Limiting Factor Oxygen Debt Metabolism	
Summer Term 1	Compare and contrast between aerobic and anaerobic respiration focusing on their efficiency, investigate industrial applications to maximise the rates of both				Formative Assessment – Colonising Mars		Links made to food production and the cost of living. Discuss the impact of human activity on the environment.

	photosynthesis and respiration in supporting the farming, drinks and food industry.				End of Topic Assessment		
Summer Term 2	Define key terms – communities, biotic and abiotic, biodiversity, and ecosystem. Describe and explain the adaptations of organisms. Describe how to investigate the distribution of organisms in a given area. Discuss how materials are recycled. Discuss the impact of humans on organisms and the environment.	**B7 Ecology**	To measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species To investigate the effect of temperature on the rate of decay of fresh milk by	**Required Practical Quadrats** **Required Practical Decay**	Formative Assessment K&U – Biomass Formative assessment Quadrats/Sampling Techniques (NUM) 6 Mark Question Formative Assessment Decay	Community Biotic Abiotic Adaptation Biodiversity Ecosystem	

			measuring pH change.		End of Topic Assessment		

Subject Information including exam board details:

AQA Biology 4461

Careers linked to this subject area:

Biologist

Ecologist

Geneticist

Marine Biologist

Health Care

Paramedic

Medical Careers

Enrichment Opportunities:

Science in the News : Science News Explores | News from all fields of science for readers of any age (snexplores.org)

Seneca Learning Free Homework & Revision for A Level, GCSE, KS3 & KS2 (senecalearning.com)

Focus Educational log in – Interactive Required Practicals https://www.focuselearning.co.uk/u/38146/gbhzCgxzycptBrCnafDAomEiyydluFiqv

BBC Bitesize GCSE Biology (Single Science) - AQA - BBC Bitesize