



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Cell Biology	Cell Biology	Cell Biology	Organisation	Organisation	Organisation
Content	<ul style="list-style-type: none"> -Cell types and structures -Microscopy -Cell differentiation -Cell Specialisation 	<ul style="list-style-type: none"> -Stem Cells -Chromosomes and the cell cycle -Binary Fission -Culturing Microorganisms 	<ul style="list-style-type: none"> -Diffusion -Osmosis -Active Transport -Exchanging Substances 	<ul style="list-style-type: none"> -Levels of Organisation -The Digestive System -Enzymes -Food Tests 	<ul style="list-style-type: none"> -The Respiratory System -The Circulatory System -Cardiovascular Disease and Treatments 	<ul style="list-style-type: none"> -Non-Communicable Diseases -Plant Organisation -Transport in Plants
Rationale/ Linking	<p>In year 9 students initially study Cell Biology, where they must recall basic cell types and structure, identify the correct locations for genetic material, aerobic respiration and protein synthesis. Students will learn to observe cell diagrams and determine cell type (prokaryotic vs. eukaryotic). Students will also learn to differentiate between different specialised cells and describe the events occurring in the cell cycle, including mitosis. They will also determine the ploidy of the daughter cells, which is crucial information that they will require in order to understand future topics in year 11, such as human reproduction including sexual and asexual reproduction. The year 9 curriculum progresses on to include the fundamental concepts of diffusion, osmosis and active transport, which provides fertile ground to help set the stage for future learning. For example, students are expected to revisit concepts and content from this foundational year, as they move to more rigorous topics, such as bioenergetics (including respiration and photosynthesis) and osmoregulation (which includes detailed application of osmosis and active transport) and adaptations of organisms (where the importance of key ideas such as surface area : volume is reinforced).</p>			<p>In the second half of the spring term, students move on to study the module Organisation. Here, students build on their foundational knowledge of cells and transport of substances, and develop their understanding of how cells are arranged and organised within the whole organism. For example, students will learn about specialised cells of the digestive system (eg epithelial cells) and how these are arranged into tissues, organs and organ systems in order to ensure the efficient digestion and absorption of vital nutrients. Students will then learn how the circulatory system is adapted to supply these nutrients (and remove the waste products) to ensure proper functioning of cells, as well as linking the role of the respiratory system to that of the previously mentioned ones. This module provides a strong link between the content and ideas covered in the cells module as well as setting the scene for students to establish thorough links to future topics including homeostasis in year 10 and the immune system in year 11.</p>		
Assessment	<p>Regular exam-style assessments including mid-module and end of module assessments. A year 9 pathways assessment is also completed in the Autumn term.</p>			<p>Learning Resources</p>		<p>CGP revision guide Cognito Youtube channel GCSEPod Revision resources available on TEAMS</p>



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Bioenergetics	Bioenergetics	Homeostasis and Response	Homeostasis and Responses	Ecology	Ecology
Content	<ul style="list-style-type: none"> -Photosynthesis equations -The uses of glucose -Factors affecting the rate 	<ul style="list-style-type: none"> -Aerobic respiration -Anaerobic respiration -The effects of exercise -Metabolism 	<ul style="list-style-type: none"> -The nervous system / reflexes -The endocrine system (glucose regulation, reproductive system) 	<ul style="list-style-type: none"> -Negative feedback -The kidneys -Plant responses 	<ul style="list-style-type: none"> -Ecosystems and sampling -Adaptations -Food chains -Cycles (water, carbon and decay) 	<ul style="list-style-type: none"> -Biodiversity and managing waste -Global warming -Conservation -Energy efficiency -Food security
Rationale/ Linking	<p>Following on from the focus on organ systems from the organisation module in the second half of year 9, year 10 students initially refocus their attention back to a sub-cellular level by looking at the reactions of photosynthesis and respiration. This links back to, and builds upon, the work on mitochondria, chloroplasts and the cytoplasm covered at the start of cell Biology in year 9. Because students have covered the topics of the digestive, respiratory and circulatory system in year 9, they can now apply their new understanding of respiration to the effects that exercise has on these systems and again look at how adaptations of the organ systems help to ensure an efficient rate of respiration can occur. The bioenergetics module's key topics of photosynthesis, respiration and metabolism provides a strong foundation to study the importance of homeostasis in the correct functioning of organisms, as well as allowing students to recognise the vital importance and role of producers and photosynthesis when they study ecology later in year 10.</p>		<p>Studying homeostasis at the half-way point the students' journey through the GCSE Biology course allows students to make and consolidate strong links between a myriad of topics covered so far in years 9 and 10. For example, glucose regulation provides strong links to the work on respiration covered in the previous bioenergetics module, the kidneys allows us to recall and apply knowledge of osmosis from cell biology in year 9, and the topics of the endocrine system and thermoregulation relate well to the topic of circulation and bioenergetics from previous modules. In year 11 students will refer back to the importance of homeostasis when we look at the effects of disease and how this can disrupt the balance of conditions, for example when a fever occurs during our response to infection.</p>		<p>This is an appropriate point to widen students understanding in Biology beyond that of sub-cellular processes and the defined limits of individual organisms. Various topics link very well with content from earlier in the year 10 course (including the links between food chains and photosynthesis, and the carbon cycle and global warming to respiration). The Summer term is an ideal opportunity to carry out sampling techniques on the school fields where there are ideal conditions for there to be an abundance of several plant species.</p>	
Assessment	Regular exam-style assessments including mid-module and end of module assessments.			Learning Resources	<p>CGP revision guide Cognito Youtube channel GCSEPod Revision resources available on TEAMS</p>	



Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Infection and Response	Infection and Response	Inheritance, Variation and Evolution	Inheritance, Variation and Evolution	Completion of course, revision and exams	
Content	-Communicable diseases -Defences against infection -Vaccination and drug development	-Monoclonal antibodies -Plant diseases -Plant defences	-Types of reproduction -DNA and the genome -Mutations and protein synthesis -Mendelian Inheritance	-Genetic technologies -Selective breeding -Natural selection -Classification -Extinction	Exam practice, review of required practical's and key content	
Rationale/ Linking	Students are required to build on from their understanding of cell types from year 9 and prior knowledge of bacterial replication through binary fission. Links between this module and Cell Biology allow us to create thorough synoptic assessments which demand that students apply their understanding of aseptic techniques and the microorganism required practical to new contexts. The work on immunity links back to the ideas in year 9 and 10 that require an understanding of the key idea of specificity of shape in order for processes to work effectively (as exemplified in the lock and key model of enzyme activity in year 9, the role of neurotransmitters and receptors in year 10, and the mechanism of antibody/antitoxin complementarity with antigens in this current module.		This is a broad module in scope and content and allows opportunity throughout for highly relevant spiral learning and review. For example, the more in depth study of the DNA molecule and the work on reproduction and cell division links back to year 9's Cell Biology module. The section on evolution by natural selection requires prior knowledge and understanding from the Ecology module in year 10, and students recall the work from the Infection and Response module earlier in year 10 when looking at antibiotic resistance as evidence for evolution by natural selection.		Key content revision focuses on common areas of weakness that have been identified through class and trial assessments. Resources are provided for students to develop their factual recall of the content to ensure preparation of AO1 style questions. Students review the required practical's reinforce the disciplinary skills developed through the course. Continued focus on exam practice and technique to prepare students for the final exams, in particular AO2 and AO3 style questions.	
Assessment	Regular exam-style assessments including mid-module and end of module assessments.			Learning Resources	CGP revision guide Cognito Youtube channel GCSEPod Revision resources available on TEAMS	