



YEAR 13 TERM 1

‘An ambitious curriculum that meets the needs of all’

Medium Term Planning - Topic: Population size and ecosystems

Curriculum Intent	
Skills/National Curriculum Links	<p>Developing knowledge from GCSE Biology or GCSE Combined Science, pupils will be taught, following National Curriculum guidelines, the following this topic:</p> <ul style="list-style-type: none"> • Populations and their growth • The abundance and distribution of organisms • Ecosystems • Ecological pyramids • Succession • Nutrient cycling <p>Specified practical work:</p> <ul style="list-style-type: none"> • Investigation into the abundance and distribution of organisms in a habitat • Investigation of continuous variation in a species (including use of Student's t-test)
Spiritual, moral, social, and cultural development	<p>SMSC: Care of the environment PSHE/British Values: Care of the environment Skills Builder: Practical work, independent investigation, data handling and analysis</p>
Numeracy	<p>Calculation of gross and net productivity Interpreting log graphs</p>
Literacy	<p>Vocabulary Tier 2: Population, birth rate, immigration, abundance, competition, distribution, ecosystem, habitat, niche, global warming, deforestation, greenhouse effect, carbon footprint, fertiliser Vocabulary Tier 3: Equilibrium species, environmental resistance, biotic, abiotic, carrying capacity, density dependent factors, community, biomass, gross primary productivity, net primary productivity, secondary productivity, photosynthesis, ecological pyramid, succession, climax community, pioneer species, primary succession, secondary succession, commensalism, mutualism, nitrogen fixation, nitrification, ammonification, denitrification, Reading: Students are given opportunity to develop their skills in specified tasks that develop disciplinary literacy. Throughout the A Level Biology course they develop their understanding of the requirements of exam questions and the key terminology in questions. In addition, they read practical methodology and translate this to actions in laboratory tasks. Writing: Students construct answers independently and through class teaching. Their answers range from single word answers to the planning and writing of 9-mark “extended writing” tasks that require linking of multiple concepts from a topic or across topics. These often develop students’ ability to construct written evaluations of contrasting situations, or data, where the use of comparative connectives are required. Oracy: Students are regularly given the opportunity to practice their scientific vocabulary in class discussion, through choral response, pair or group discussion and in giving instruction to others during practical activities.</p>
Becoming future ready	<p>Careers/Employability: A Level Biology students from Crompton House progress on to a wide range of undergraduate degrees, degree apprenticeships and into work. Opportunities to develop effective communication skills, concise written work, following written and verbal instructions as well as extending their problem solving skills are all key skills identified by business leaders for future success.</p>
Adaptation	<p>Throughout this topic, quality first teaching will provide adaptive teaching accessible to all students:</p>
QFT/SEND Provision	<p>By product: Assessments have opportunities for students to achieve all grades, with structured questions and opportunities for development of extended writing for all abilities. By Intervention: by providing different levels of supervision and support in theory and in practical lessons. By Progressive Questioning: exploring pupils’ understanding through interactive dialogue. By Grouping: according to prior attainment, gender, social preference. By Task: Pupils are involved in the identification of targets which are meaningful to them and in the selection of an appropriate task to develop specific skills further. By Offering Optional Activities: In class or as homework, to extend learning. This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>

Implementation Curriculum Delivery	<p>To be able to:</p> <ul style="list-style-type: none"> • Explain factors controlling the size of a population • Describe how to sample populations and assess their abundance and distribution • Understand the concepts of ecosystem, habitat, community, primary and secondary • Productivity • Describe the transfer of biomass through the ecosystem, shown in pyramids of biomass • Explain why herbivores have a lower secondary productivity than carnivores • Describe and explain the key differences between primary and secondary succession • Understand that decomposers are key organisms involved in the cycling of nutrients • Describe the carbon cycle and the effects on it of deforestation and combustion • Understand the causes and effects of global warming • Explain the need for changes in agricultural practice • Describe the role of microorganisms in the nitrogen cycle • Describe the importance of fertilisers and the ploughing and draining of agricultural land • Describe how the use of fertilisers can lead to water pollution <p>Red denotes interleaving; aspects of knowledge covered previously.</p>
Current learning to be developed in the future within:	<p>Photosynthesis Microbiology (growth curves)</p>
Assessment	<p>Refer to assessment maps for formative and summative assessment opportunities.</p>
Impact	<p>Attainment and Progress – Refer to assessment results / data review documentation.</p>

