




YEAR 12 TERM 1

'An ambitious curriculum that meets the needs of all'

Medium Term Planning - Topic: Core concepts: nucleic acids and their functions

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"> Nucleotide structure The role of chemical energy in biological processes The structure of nucleic acids DNA replication and proof for our model of DNA replication Protein synthesis <p>Specified practical work:</p> <ul style="list-style-type: none"> Extraction of DNA from living material
Spiritual, moral, social, and cultural development	<p>SMSC:</p> <p>PSHE/British Values: Discovery of the structure of DNA (discussion of scientific collaboration / Rosalind Franklin)</p> <p>Skills Builder: Practical skills, reading a scientific method, recording results</p>
Numeracy	<p>Chargaff's rule – percentages of DNA bases in a double strand</p> <p>Calculation of length of DNA by average distance between 'turns' of the double helix</p>
Literacy	<p>Vocabulary Tier 2: DNA, chromosome, gene,</p> <p>Vocabulary Tier 3: Adenine, cytosine, thymine, guanine, purine, pyrimidine, sugar-phosphate backbone, mRNA, tRNA, rRNA, Meselson-Stahl experiment, intron, exon, transcription, translation, helicase, polymerase</p> <p>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.</p> <p>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.</p> <p>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> <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.</p> <p>By Intervention: by providing different levels of supervision and support in theory and in practical lessons.</p> <p>By Progressive Questioning: exploring pupils' understanding through interactive dialogue.</p> <p>By Grouping: according to prior attainment, gender, social preference.</p> <p>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.</p> <p>By Offering Optional Activities: In class or as homework, to extend learning.</p> <p>This QFT/SEND provision will be explicit within the lesson-by-lesson schemes of work.</p>
QFT/SEND Provision	
Implementation	<p>To be able to:</p> <ul style="list-style-type: none"> Describe the structure and roles of nucleotides

Curriculum Delivery	<ul style="list-style-type: none">Understand the importance of chemical energy and the structure and role of ATPDescribe and compare the structures of DNA and RNAKnow the functions of DNAKnow the characteristics of the genetic codeOutline the difference between exons and intronsDescribe the processes of transcription and translation in protein synthesisKnow how to extract DNA from living organisms	
Learning Outcomes (Knowledge)	Red denotes interleaving; aspects of knowledge covered previously.	
Current learning to be developed in the future within:	Core concept topics are developed further in all three final exam Components.	
Assessment	Refer to assessment maps for formative and summative assessment opportunities.	
Impact	Attainment and Progress – Refer to assessment results / data review documentation.	