Key Stage 4 Curriculum Map Department: Science Subject: Biology Year: 11

Term	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Unit Title(s)	**Plants and photosynthesis** **Nervous system**	**Hormones and homeostasis** **Reproduction and genetic engineering**	**Classification and evolution**	**Health issues**	**Revision and consolidation ahead of GCSE exams**	**N/A**
Overview / rationale & statement of importance	Students will develop a high-quality understanding of the world through biology. They will be given opportunities to develop skills in evaluation, assessing evidence and presenting data alongside their growing knowledge of the natural world. Students will build on their knowledge of Biology from Key Stage 3, deepening their appreciation of the natural world, the cells and systems in their own bodies and the mechanisms of inheritance. Students will have the opportunity to develop practical skills, increasing manual dexterity and the ability to work as a team, communicating ideas and interpreting instructions clearly.					
Iterative Links	Y10 Aut 1 Cell structure Y10 Respiration KS3 Photosynthesis (Year 8)	KS3 Human Reproduction (Year 7) Y10 Cell structure; DNA & Inheritance	KS3 Variation and interdependence (Year 7) KS3 Wonders of the Natural World (Year 9) KS3 Evolution (Year 9)	KS3 Health and Disease (Year 9) Y10 Spring 1 Heart, Circulation and Respiration		
Knowledge & Understanding	• Tissues in a leaf • Transpiration and translocation • The word and symbol equations for photosynthesis • The limiting factors for photosynthesis • The function of the nervous system and its components. • How information passes through the nervous system • The role of reflexes Required practical • The effect of a factor on the rate of photosynthesis • The effect of a factor on human reaction times Biology only • Plant diseases • Plant growth responses • The regions of the brain and their roles • The structure and function of the eye • Accommodation of the eye Required practical • The effect of light on the direction of seedling growth	• The organs in the endocrine system • The role of the endocrine system in blood glucose control • The control of the menstrual cycle and fertility using hormones • Sexual and asexual reproduction • The process of meiosis Biology only • The control of water balance in the body • The control of body temperature • The advantages and disadvantages of asexual reproduction • Examples of organisms that reproduce sexually and asexually • Reproduction in bacteria Required practical • The preparation of an uncontaminated cell culture and the investigation of the effect of antimicrobial substances on bacterial growth.	• The role of mutations in creating variation in a species • The theory of evolution by natural selection • Fossilisation • Extinction • Antibiotic resistance • Selective breeding • Classification techniques, including interpreting evolutionary trees Biology only • The work of Alfred Russel Wallace • Speciation	• Health and the causes of ill health. • The interaction between different types of disease • Risk factors for diseases including genetic and lifestyle factors • Cancers including the difference between benign and malignant tumours • Interpretation of population level data regarding the trends in disease spread		•

Skills	Practical skills Working scientifically Fluency in science knowledge Enquiry processes Scientific oracy Independent study		Practical skills Working scientifically Fluency in science knowledge Enquiry processes Scientific oracy Independent study		Practical skills Working scientifically Fluency in science knowledge Enquiry processes Scientific oracy Independent study	
Literacy	- Topic factual summaries develop scientific vocabulary - Literacy-specific tasks develop students' scientific reading - Extended writing questions prepare students for 6-mark questions in GCSE exams. - Use of appropriate scientific terminology		- Topic factual summaries develop scientific vocabulary - Literacy-specific tasks develop students' scientific reading - Extended writing questions prepare students for 6-mark questions in GCSE exams. Use of appropriate scientific terminology		- Topic factual summaries develop scientific vocabulary - Literacy-specific tasks develop students' scientific reading - Extended writing questions prepare students for 6-mark questions in GCSE exams. Use of appropriate scientific terminology	
Numeracy	- Graph skills - Calculate results - Present observations and data - Evaluate data - Using SI units - Statistical techniques - Data analysis - Use and derive simple equations		- Graph skills - Calculate results - Present observations and data - Evaluate data - Using SI units - Statistical techniques - Data analysis - Use and derive simple equations		- Graph skills - Calculate results - Present observations and data - Evaluate data - Using SI units - Statistical techniques - Data analysis - Use and derive simple equations	
Assessment	Informal assessment in class and through homework activity .	Informal assessment in class and through homework activity Mock exams	Informal assessment in class and through homework activity	Informal assessment in class and through homework activity Mock exams	GCSE Exams	GCSE Exams
Cross-curricular		PSHE – hormones & puberty, the menstrual cycle PSHE – debating skills development	RS – theories of evolution (a discussion of creationism as a reason Darwin and Wallace's theories were not widely believed)	PSHE – Health		