GCSE Biology KS4 Curriculum Overview 2019 – 20

Science is life, life is science. Explore science. Discover science. Explain science.

Exam board and syllabus name: Edexcel GCSE Biology		Coursework - 0 %		Final examination - 100%
Year 9				
Term	**Unit/topic**	**Knowledge**	**Skills**	**Assessment**
Spring term 1 **Spring term 2**	Biology 1 – Key Concepts in Biology	Cells & Enzymes. Transporting Substances in and out of cells.	Developing knowledge. Building on KS3 knowledge on cells and applying knowledge to new situations. Using simple calculations, (eg magnification, conversion of units). Developing practical skills.	End of topic assessment. Core Practicals in Biology 1- Using Microscopes pH + enzyme activity Food Tests. Osmosis in potato cells.
Summer term 1 **Summer term 2**	Biology 2 – Cells and Control	Mitosis, stem cells, the nervous system, the brain, the eye.	Developing knowledge, using simple calculations, (eg percentile growth charts). Developing practical skills (eg investigating reaction times). Evaluating ethical issues of stem cell research.	End of topic assessment.
Year 10				
Term	**Unit/topic**	**Knowledge**	**Skills**	**Assessment**
Autumn term 1	Biology 3 – Genetics	Structure of DNA. Monohybrid inheritance of genes. Protein Synthesis Multiple Alleles and Sex-Linked Disorders.	Developing knowledge. Building on KS3 knowledge on Genetics and applying knowledge to new situations.	End of topic assessment.

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			Interpreting and evaluating data (family pedigree diagrams, probability in predicting outcomes of genetics crosses). Developing practical skills (DNA extraction).	
Autumn term 2	Biology 4 – Natural Selection and Genetic Modification	Natural Selection, Classification of organisms, Genetic Engineering.	Developing knowledge and applying knowledge to new situations, interpreting and evaluating data (evolutionary tree diagrams, classification keys). Developing practical skills (tissue culture).	End of topic assessment.
Spring term 1	Biology 5 – Health, Disease and the Development of Medicines	Communicable and non-communicable disease, spreading pathogens, virus life cycle, immune system, plant diseases and defences, monoclonal antibodies.	Developing knowledge and applying knowledge to new situations. Interpreting and evaluating data (eg disease rates). Using Simple calculations and developing practical skills (eg calculating BMI, calculating cross-sectional areas of bacterial cultures using πr^2)	End of topic assessment. Core Practicals in Biology 5- Investigating different antimicrobials on bacterial growth.
Spring term 2				
Summer term 1	Biology 6 – Plant Structures and their Functions	Photosynthesis reaction, limiting factors, adaptations of plants in extreme	Developing knowledge. Building on KS3 knowledge	End of topic assessment.
Summer term 2				

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		climates, transporting substances in plants, plant hormones.	and applying knowledge to new situations. Interpreting and evaluating data (eg, the inverse square law of light intensity and its effect on rate of photosynthesis.	Core Practicals in Biology 6- Investigating effect of light intensity of photosynthesising algae. *Year 10 Biology mock paper covering content from Biology 1-5*
Year 11				
Term	**Unit/topic**	**Knowledge**	**Skills**	**Assessment**
Autumn term 1	Biology 7 – Animal Co-ordination, Control and Homeostasis	Homeostasis in humans- thermoregulation and control of metabolic rate. Hormones- control of blood glucose and diabetes, control of menstrual cycle and fertility, osmoregulation and kidneys.	Developing knowledge and building on KS3 knowledge (eg human reproduction and the menstrual cycle) applying knowledge to new situations Developing practical skills (kidney dissections)	End of topic assessment.
Autumn term 2	Biology 8 – Exchange and Transport in Animals	Adaptations of alveoli (exchange in mammals), circulatory system (structure of heart, blood vessels), Respiration.	Developing knowledge and building on KS3 knowledge (eg respiration) applying knowledge to new situations. Interpreting and evaluating data (aerobic vs anaerobic respiration). Developing practical skills (heart dissections).	End of topic assessment. Core Practicals in Biology 8- Respiration rates in small organisms

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			Simple calculations (cardiac output, heart and breathing rates).	
Spring term 1 **Spring term 2**	Biology 9 – Ecosystems and Material Cycles	Interdependence between organisms in an ecosystem. Abiotic and biotic factors affecting an ecosystem, biodiversity, nutrient cycles, parasitism and mutualism, food security, assessing pollution, decomposition.	Developing knowledge and building on KS3 knowledge (eg Year 8 ecosystems) and applying knowledge to new situations. Simple calculations (eg rates of decay). Developing practical skills (different sampling techniques using quadrats). Interpreting and evaluating data (eg using indicator species to assess levels of pollution in water/the atmosphere.	End of topic assessment. Core Practicals in Biology 9- Investigating effect of abiotic factors on distribution of organisms.
Summer term 1	**Revision**			
Summer term 2	**Most of this half term is made up of study leave and GCSEs.**			