

Biology Curriculum Overview 2020-21

	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13
Term 1	Topic 1 - cells. Cell structure and function. How to use microscopes.	Topic 1 - Getting the Energy your body needs. Exploring skeletal and muscular systems.	AQA 1 Cells structure and transport. Practical skills:	AQA 7 Non-communicable diseases. Explore how cancer, obesity and diet can cause disease. AQA 8 Photosynthesis. The biochemical process of photosynthesis. How plants use glucose.	AQA 5 Communicable diseases. Explore health and disease. Human defence responses. To include the role of white blood cells.	2.2 Biological Molecules. 2.1 Cell Structure	5.3 Neuronal Communication. 5.6 Photosynthesis. 5.5 Plant and animal responses. 5.4 Hormonal Communication.
Practical skills			AT1 - use appropriate apparatus to record length and area. AT 7 - use a microscope to make observations.	AT1 - use appropriate equipment to record the rate of photosynthesis. Control the temperature with a heat shield. AT5 - measure rate of reaction by oxygen gas production.			
Maths skills			Recognise and use expressions in decimal form. Use ratios, fractions and percentages. Make order of magnitude calculations. Converting units.	Interpret data on risk factors. Look for correlations between smoking and non-communicable diseases. Study data to refute the claim that pregnant women should not drink alcohol.			

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Term 2	Topic 2 - Reproduction. How animals and plants reproduce and ensure variety.	Topic 1 - Getting the Energy your body needs. Investigating respiration and fermentation. Topic 2 - Our Health and the effect of Drugs. Researching effects of alcohol, drugs and smoking on the body.	AQA 1 Cells structure and transport. Investigate differences between osmosis, active transport and diffusion. AQA 2 Cell Division. Mitosis, cell cycle and stem cells.	AQA 9 Respiration. Differences between aerobic and anaerobic respiration. 10 The Human Nervous System. To include reflexes and the principles of homeostasis.	AQA 6 Preventing and treating disease. How vaccines and antibiotics work. Research drug testing and clinical trials.	2.3 Nucleic Acids. 2.4 Enzymes. 2.6 Cell division, cell diversity and differentiation. 2.5 Biological membranes	5.7 Respiration. 6.1 Cellular control. 6.2 Patterns of inheritance.
Practical skills			AT3 - use equipment to measure the process of osmosis. Plot two variables from experimental data.	Carry out an investigation to measure the change in pulse rate whilst they are doing exercise.			
Maths skills			Calculate SA:V ratios. Recognise and use expressions in standard form. Make estimates of the results of simple calculations. Understand symbols: =, <, >, ~	Calculate percentage changes. Choose how to display continuous data. Identify anomalous results. Learn about reliability.			

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Term 3	Topic 3 - Eating, drinking and Health. Exploring balanced diet, digestion and enzymes.	Topic 3 - Disease and microbes. Human immune system and how we prevent infectious diseases.	AQA 3 Organisation and the digestive system. The chemistry of food and how enzymes work in breaking them down.	AQA 11 Hormonal coordination. Principles of controlling blood sugar levels. Research diabetes and explore how we can control it. AQA 13 Reproduction. Mendelian genetics and genetic disorders.	AQA 10 The human nervous system. Principles of homeostasis. Structure of neurone. Reflexes. Structure of the brain and eye.	4.1 Communicable diseases. 3.1 Exchange surfaces and breathing.	6.2 Patterns of inheritance. 6.3 Manipulating genomes. 6.4 Cloning.
Practical skills			AT2 - safe use of bunsen burner and a boiling water bath. AT8 - use of qualitative reagents to identify biological molecules. AT5 - measure the rate of reaction by the colour change of iodine.	None			
Maths skills			Recognise and use expressions in standard form. Use an appropriate number of significant figures.	Analyse data that shows the link between Type 2 diabetes and obesity. Interpret negative feedback diagrams.			

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Term 4	Continue with Topic 3 - breathing and gas exchange. Topic 4 - Plants and Ecosystems. How plants make food.	Topic 4 - Variation for survival. Causes of variation. Researching selective breeding and cloning.	AQA 4 Organising animals and plants. Blood vessels and the heart. Investigating how factors effect rate of transpiration.	AQA 14 & 15 Genetics, Variation and evolution. Natural selection and evidence using fossils.	AQA 11 Hormonal coordination. Principles of controlling blood sugar levels. Research diabetes and explore how we can control it. AQA 13 Reproduction. Mendelian genetics and genetic disorders.	4.3 Classification and evolution. 3.3 Transport in plants. 4.2 Biodiversity.	6.5 Ecosystems. 6.6 Populations and sustainability
Practical skills			Safety techniques on how to do an organ dissection.	Dissect flower to identify male and female sex organs.			
Maths skills			Make orders of magnitude. Draw pie charts to show blood composition. Interpret data to help evaluate the use of stents. Calculate mean, mode, median.	Record data in punnet squares to show how features are inherited.			

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Term 5	Topic 4 - Plants and Ecosystems. Investigate photosynthesis. Look into how molecules are transported around plants.	Topic 4 - Variation for survival. Heredity and DNA.	AQA 5 Communicable diseases. How microbes are spread and cause diseases.	14 & 15 Genetics, Variation and evolution. Selective breeding, genetic engineering. Discuss the benefits and concerns of biotechnology.	12 Homeostasis in action. Organs involved in the removal of waste. Structure of kidney.	4.2 Biodiversity	Revision and exams.
Practical skills			AT3 - use equipment to observe and measure the process of bacterial growth. AT4 - safe and ethical use of bacteria to measure response to antibiotics.				
Maths skills			Understand the principles of sampling. Use a scatter diagram to identify a correlation.	Analyse data from twin studies. Use data about milk yields to choose cattle breed.			

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Term 6	Topic 4 - Plants and Ecosystems. Food chains and food webs. Ecological balance and interdependence.	Extension Topic - Behaviour. Extended project exploring innate and learned behaviour in animals.	AQA 6 Communicable diseases. How vaccines and antibiotics work. Research drug testing and clinical trials.	AQA 16 Adaptations, interdependence and competition. Loss of energy in a food chain. Pyramids of numbers and biomass. Recycling materials.	Revision and exams.	5.1 Communication, homeostasis and energy. 5.2 Excretion as an example of homeostatic control.	Revision and exams.
Practical skills			AT3 - selecting appropriate apparatus and techniques to measure the process of reaction time. AT4 - safe and ethical use of humans to measure physiological function.				
Maths skills			Discuss sizes and converting units. Consider exponential growth in bacteria. Measure area of circle. Interpret graphs that show antibody production after infection.				