



Curriculum map – Y10 combined biology

YEAR 10	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
TOPIC(s)	Infection and response	Infection and response	Bioenergetics	Bioenergetics	Homeostasis and response	Homeostasis and response
What students will know	<p>Pathogens are microorganisms that cause infectious disease. Pathogens may be viruses, bacteria, protists or fungi. They may infect plants or animals and can be spread by direct contact, by water or by air</p> <p>The symptoms, spread and treatment of HIV, measles, TMV, salmonella, gonorrhoea, malaria and rose black spot</p> <p>The roles of white blood cells, phagocytes, and lymphocytes</p>	<p>The difference between antibiotics and painkillers</p> <p>Bacteria are treated with antibiotics but not viruses as they live inside cells</p> <p>The process of discovery and development of potential new medicines, including preclinical and clinical testing</p> <p>Drug testing involves double blind trials and placebos</p> <p>The purpose of peer review to avoid bias and ensure results are valid</p>	<p>Photosynthesis is an endothermic reaction in which energy is transferred from the environment to the chloroplasts by light</p> <p>How temperature, light intensity, carbon dioxide concentration, and the amount of chlorophyll effect the rate of photosynthesis</p>	<p>Cellular respiration as an exothermic reaction which is continuously occurring in living cells</p> <p>Aerobic respiration requires oxygen whereas anaerobic does not</p> <p>carbon dioxide + water → glucose + oxygen</p> <p>glucose + oxygen → carbon dioxide + water</p> <p>glucose lactic → acid</p> <p>glucose → ethanol + carbon dioxide</p> <p>The heart rate, breathing rate and breath volume increase during exercise to supply the muscles with more oxygenated blood</p> <p>Metabolism is the sum of all the reactions in a cell or the body</p>	<p>Homeostasis is the regulation of the internal conditions of a cell or organism to maintain optimum conditions for function in response to internal and external changes including blood glucose, water levels and temperature</p> <p>The nervous system enables humans to react to their surroundings and co-ordinate their behaviour</p> <p>Stimulus → receptor → coordinator → effector → response</p> <p>Reflex actions are automatic and rapid; they do not involve the conscious part of the brain</p>	<p>The position of the main organs in the endocrine system on a diagram of the human body</p> <p>The pituitary gland in the brain is a 'master gland' which secretes several hormones into the blood in response to body conditions</p> <p>Fertility can be controlled by a variety of hormonal and non-hormonal methods of contraception</p>

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What students will be able to do	Explain how diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants Explain how the spread of diseases can be reduced or prevented Explain the role of the immune system in the defence against disease	Explain the stages of vaccination Interpret data on the relationship between antibody production and vaccination	Recognise the chemical symbols: CO ₂ , H ₂ O, O ₂ and C ₆ H ₁₂ O ₆ Recognise the balanced symbol equation for photosynthesis Measure and calculate rates of photosynthesis Extract and interpret graphs of photosynthesis rate involving one limiting factor	Plot and draw appropriate graphs selecting appropriate scale for axes Translate information between graphical and numeric form	Extract and interpret data from graphs, charts and tables, about the functioning of the nervous system Translate information about reaction times between numerical and graphical forms Compare Type 1 and Type 2 diabetes and explain how they can be treated	Extract information and interpret data from graphs that show the effect of insulin in blood glucose levels in both people with diabetes and people without diabetes Describe the roles of hormones in human reproduction, including the menstrual cycle Evaluate the different hormonal and non-hormonal methods of contraception
Beyond the classroom	Plastic-eating bacteria: the pollution solution? Laboratory experiment shows that bacteria really eat and digest plastic (phys.org)	Vaccine releases Vaccines News -- ScienceDaily	Plant power! The worldwide water-lifting power of plants is enormous (sciencenews.org)	Biodegradable plastic using sunlight? Artificial Photosynthesis Makes Biodegradable Plastic Using Sunlight (scitechdaily.com)	Test your reaction at home Science-U @ Home / Reaction Time Experiment	Turning the table on birth control? New male birth control shows promising results in lab mice, study says (msn.com)