Year 11 Revision Schedule 2026

Subject/Course:	***GCSE Combined Science: BIOLOGY***

February Trial Exam content

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
Cell Structure	The structure of plants and animal cells (eukaryotes)					
	The structure of prokaryotic cells					
	Order of magnitude calculations, including the use of standard form.					
Topic 2: Genes and Health	Be able to explain how the main sub-cellular structures are related to their functions.					
	judge the relative size or area of sub-cellular structures.					
	Required practical activity 1: use a light microscope to observe, draw and label a selection of plant and animal cells. A magnification scale must be included.					
	Explain how the structure of different types of cells relate to their function.					
	Explain the importance of cell differentiation					
	Differences in magnification and resolution between light microscope and electron microscope					
	carry out calculations involving magnification, real size and image size					
	Know that the nucleus of a cell contains chromosomes made of DNA molecules. Each chromosome carries a large number of genes.					
	Describe the stages of the cell cycle, including mitosis.					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
	Describe the function of stem cells in embryos, in adult animals and in the meristems in plants.					
	Evaluate the practical risks and benefits, as well as social and ethical issues, of the use of stem cells in medical research and treatments.					
	Explain how different factors affect the rate of diffusion					
	Be able to calculate and compare surface area to volume ratios.					
	Explain how the small intestine and lungs in mammals, gills in fish, and the roots and leaves in plants, are adapted for exchanging materials					
	Understand that water may move across cell membranes via osmosis. Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane.					
	Required practical activity 2: investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue .					
	Know that active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration.					
	Be able to: • describe how substances are transported into and out of cells by diffusion, osmosis and active transport • explain the differences between the three processes.					
Organisation	Relate knowledge of enzymes to Metabolism .					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
	Be able to describe the nature of enzyme molecules and relate their activity to temperature and pH changes.					
	carry out rate calculations for chemical reactions.					
	Use the 'lock and key theory' as a simplified model to explain enzyme action..					https://snabbiology.co.uk/observing-mitosis/
	Recall the sites of production and the action of amylase, proteases and lipases.					
	Required practical activity 3: use qualitative reagents to test for a range of carbohydrates, lipids and proteins.					
	Required practical activity 4: investigate the effect of pH on the rate of reaction of amylase enzyme.					
Topic 4: Biodiversity and natural resources	know the structure and functioning of the human heart and lungs, including how lungs are adapted for gaseous exchange.					
	Explain how the structure of blood vessels relates to their functions					
	Recognise different types of blood cells in a photograph or diagram, and explain how they are adapted to their functions.					
	Evaluate the advantages and disadvantages of treating cardiovascular diseases by drugs, mechanical devices or transplant					
	Describe the relationship between health and disease and the interactions between different types of disease.					
	be able to: • discuss the human and financial cost of these non-communicable diseases to an					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
	individual, a local community, a nation or globally • explain the effect of lifestyle factors including diet, alcohol and smoking on the incidence of non-communicable diseases at local, national and global levels.					
	Describe cancer as the result of changes in cells that lead to uncontrolled growth and division.					
	Explain how the structures of plant tissues are related to their functions.					
	Explain the effect of changing temperature, humidity, air movement and light intensity on the rate of transpiration.					
Infection and response	Explain how diseases caused by viruses, bacteria, protists and fungi are spread in animals and plants.					
Topic 5: On the wild side	Describe the non-specific defence systems of the human body against pathogens					
	Explain the role of the immune system in the defence against disease					
	Explain how vaccination will prevent illness in an individual, and how the spread of pathogens can be reduced by immunising a large proportion of the population					
	Explain the use of antibiotics and other medicines in treating disease					
	Describe the process of discovery and development of potential new medicines, including preclinical and clinical testing.					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
Bioenergentics	Describe photosynthesis as an endothermic reaction in which energy is transferred from the environment to the chloroplasts by light					
	Explain the effects of temperature, light intensity, carbon dioxide concentration, and the amount of chlorophyll on the rate of photosynthesis.					
	Measure and calculate rates of photosynthesis					
	(HT only) Describe the factors that limit photosynthesis. (HT only) Explain graphs of photosynthesis rate involving two or three factors and decide which is the limiting factor.					
	(HT only) Understand and use inverse proportion – the inverse square law and light intensity in the context of photosynthesis. (HT only) Limiting factors are important in the economics of enhancing the conditions in greenhouses to gain the maximum rate of photosynthesis while still maintaining profit.					
	Required practical activity 5: investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed.					
	Compare the processes of aerobic and anaerobic respiration					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
	(HT only) Blood flowing through the muscles transports the lactic acid to the liver where it is converted back into glucose. Oxygen debt is the amount of extra oxygen the body needs after exercise to react with the accumulated lactic acid and remove it from the cells.					
Homeostasis and response	Explain that 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					
	Explain how the structure of the nervous system is adapted to its functions					
	Required practical activity 6: plan and carry out an investigation into the effect of a factor on human reaction time.					
	Describe the principles of hormonal coordination and control by the human endocrine system.					
	Explain how insulin controls blood glucose (sugar) levels in the body					
	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.					
	(HT only) If the blood glucose concentration is too low, the pancreas produces the hormone glucagon that causes glycogen to be converted into glucose and released into the blood. (HT only) Explain how glucagon interacts with insulin in a negative feedback cycle to control blood glucose (sugar) levels in the body.					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
Topic 7: Run for your life	(HT only) Explain the interactions of FSH, oestrogen, LH and progesterone, in the control of the menstrual cycle.					
	(HT only) Extract and interpret data from graphs showing hormone levels during the menstrual cycle.					
	Evaluate the different hormonal and non-hormonal methods of contraception					
	The use of hormones to treat infertility					
	(HT only) Explain the roles of thyroxine and adrenaline in the body.					
Inheritance, variation and evolution	Understand that meiosis leads to non-identical cells being formed while mitosis leads to identical cells being formed.					
	Explain how meiosis halves the number of chromosomes in gametes and fertilisation restores the full number of chromosomes					
	Describe the structure of DNA and define genome					
Topic 8: Grey matter	Discuss the importance of understanding the human genome					
	Complete a Punnett square diagram and extract and interpret information from genetic crosses and family trees					
	Be able to carry out a genetic cross to show sex inheritance					
	Describe simply how the genome and its interaction with the environment influence the development of the phenotype of an organism.					
	describe evolution as a change in the inherited characteristics of a population over time through					

Revision Schedule 2026

Topic	Key knowledge/skills/questions	R	A	G	Revised	Resources/activities/links
	a process of natural selection which may result in the formation of a new species					
	Explain the impact of selective breeding of food plants and domesticated animals					
	Describe genetic engineering as a process which involves modifying the genome of an organism by introducing a gene from another organism to give a desired characteristic					
	Describe the evidence for evolution including fossils and antibiotic resistance in bacteria					
	Use information given to show understanding of the Linnaean system					
Ecology	Describe the different levels of organisation in an ecosystem					
	Explain how a change in an abiotic factor would affect a given community					
	Explain how a change in a biotic factor might affect a given community					
	explain how organisms are adapted to live in their natural environment					
	describe some of the biological consequences of global warming.					
	describe both positive and negative human interactions in an ecosystem and explain their impact on biodiversity					
	Recall that many different materials cycle through the abiotic and biotic components of an ecosystem					