

# Biology GCSE Revision Checklist

**Blue** = Required Practical

**Red** = Higher tier only

**Green** = Triple Physics only

Title	Topic	Sub-topic	☹	☺	😊	
4.1 Cell Biology	4.1.1. Cell structure	4.1.1.1 Eukaryotes and prokaryotes				
		4.1.1.2 Animal and plant cells				
		4.1.1.3 Cell specialisation				
		4.1.1.4 Cell differentiation				
		4.1.1.5 Microscopy				
		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.				
		4.1.1.6 Culturing microorganisms (biology only)				
		Required practical activity 2: investigate the effect of antiseptics or antibiotics on bacterial growth using agar plates and measuring zones of inhibition (biology only)				
	4.1.2 Cell division	4.1.2	4.1.2.1 Chromosomes			
			4.1.2.2 Mitosis and the cell cycle			
			4.1.2.3 Stem cells			
	4.1.3 Transport in cells	4.1.3	4.1.3.1 Diffusion			
			4.1.3.2 Osmosis			
Required practical activity 3: investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue.						
4.1.3.3 Active transport						
4.2 Organisation	4.2.1 Principles of organisation					
	4.2.2 Animal tissues, organs and organ systems	4.2.2.1 The human digestive system				
		Required practical activity 4: use qualitative reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict's test for sugars; iodine test for starch; and Biuret reagent for protein				
		Required practical activity 5: investigate the effect of pH on the rate of reaction of amylase enzyme				
		4.2.2.2 The heart and blood vessels				
		4.2.2.3 Blood				
		4.2.2.4 Coronary heart disease: a non-communicable disease				
		4.2.2.5 Health issues				
		4.2.2.6 The effect of lifestyle on some non-communicable diseases				
	4.2.2.7 Cancer					
4.2.3 Plant tissues, organs and systems	4.2.3	4.2.3.1 Plant tissues				
		4.2.3.2 Plant organ system				
4.3 Infection and response	4.3.1 Communicable diseases	4.3.1.1 Communicable (infectious) diseases				
		4.3.1.2 Viral diseases				
		4.3.1.3 Bacterial diseases				
		4.3.1.4 Fungal diseases				
		4.3.1.5 Protist diseases				
		4.3.1.6 Human defence systems				
		4.3.1.7 Vaccination				
		4.3.1.8 Antibiotics and painkillers				

		4.3.1.9 Discovery and development of drugs			
	4.3.2 Monoclonal antibodies (biology only) (HT only)	4.3.2.1 Producing monoclonal antibodies			
		4.3.2.2 Uses of monoclonal antibodies			
	4.3.3 Plant disease (biology only)	4.3.3.1 Detection and identification of plant diseases			
		4.3.3.2 Plant defence responses			
4.4 Bioenergetics	4.4.1 Photosynthesis	4.4.1.1 Photosynthetic reaction			
		4.4.1.2 Rate of photosynthesis			
		Required practical activity 6: investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed.			
		4.4.1.3 Uses of glucose from photosynthesis			
	4.4.2 Respiration	4.4.2.1 Aerobic and anaerobic respiration			
		4.4.2.2 Response to exercise			
4.4.2.3 Metabolism					
4.5 Homeostasis and response	4.5.1 Homeostasis				
	4.5.2 The human nervous system	4.5.2.1 Structure and function			
		Required practical activity 7: plan and carry out an investigation into the effect of a factor on human reaction time.			
		4.5.2.2 The brain (biology only)			
		4.5.2.3 The eye (biology only)			
		4.5.2.4 Control of body temperature (biology only)			
	4.5.3 Hormonal coordination in humans	4.5.3.1 Human endocrine system			
		4.5.3.2 Control of blood glucose concentration			
		4.5.3.3 Maintaining water and nitrogen balance in the body (biology only)			
		4.5.3.4 Hormones in human reproduction			
		4.5.3.5 Contraception			
		4.5.3.6 The use of hormones to treat infertility (HT only)			
		4.5.3.7 Negative feedback (HT only)			
	4.5.4 Plant hormones (biology only)	4.5.4.1 Control and coordination			
Required practical activity 8: investigate the effect of light or gravity on the growth of newly germinated seedlings (biology only)					
4.5.4.2 Use of plant hormones (HT only)					
4.6 Inheritance, variation and evolution	4.6.1 Reproduction	4.6.1.1 Sexual and asexual reproduction			
		4.6.1.2 Meiosis			
		4.6.1.3 Advantages and disadvantages of sexual and asexual reproduction (biology only)			
		4.6.1.4 DNA and the genome			
		4.6.1.5 DNA structure (biology only)			
		4.6.1.6 Genetic inheritance			
		4.6.1.7 Inherited disorders			
		4.6.1.8 Sex determination			
	4.6.2 Variation and evolution	4.6.2.1 Variation			
		4.6.2.2 Evolution			
		4.6.2.3 Selective breeding			
		4.6.2.4 Genetic engineering			
		4.6.2.5 Cloning (biology only)			
	4.6.3 The development of understanding of genetics and evolution	4.6.3.1 Theory of evolution (biology only)			
		4.6.3.2 Speciation (biology only)			
		4.6.3.3 The understanding of genetics (biology only)			
		4.6.3.4 Evidence for evolution			
		4.6.3.5 Fossils			

		4.6.3.6 Extinction			
		4.6.3.7 Resistant bacteria			
	4.6.4 Classification of living organisms				
4.7 Ecology	4.7.1 Adaptations, interdependence and competition	4.7.1.1 Communities			
		4.7.1.2 Abiotic factors			
		4.7.1.3 Biotic factors			
		4.7.1.4 Adaptations			
	4.7.2 Organisation of an ecosystem	4.7.2.1 Levels of organisation			
		Required practical activity 9: measure the population size of a common species in a habitat. Use sampling techniques to investigate the effect of a factor on the distribution of this species.			
		4.7.2.2 How materials are cycled			
		4.7.2.3 Decomposition (biology only)			
		Required practical activity 10: investigate the effect of temperature on the rate of decay of fresh milk by measuring pH change (biology only)			
	4.7.3 Biodiversity and the effect of human interaction on ecosystems	4.7.2.4 Impact of environmental change (biology only) (HT only)			
		4.7.3.1 Biodiversity			
		4.7.3.2 Waste management			
		4.7.3.3 Land use			
		4.7.3.4 Deforestation			
		4.7.3.5 Global warming			
	4.7.4 Trophic levels in an ecosystem (biology only)	4.7.3.6 Maintaining biodiversity			
		4.7.4.1 Trophic levels			
		4.7.4.2 Pyramids of biomass			
	4.7.5 Food production (biology only)	4.7.4.3 Transfer of biomass			
		4.7.5.1 Factors affecting food security			
4.7.5.2 Farming techniques					
4.7.5.3 Sustainable fisheries					
		4.7.5.4 Role of biotechnology			