GCSE Biology Revision Guide

Combined Science & Triple Award

GCSE Biology builds outward from the cell: once you're confident with cell structure, specialisation, and transport (diffusion, osmosis, active transport), the rest of the course is largely that same logic applied at bigger and bigger scales — tissues, organs, organ systems, and eventually whole ecosystems. Spending real time on cell biology early pays off across the entire specification rather than just one topic.

Organisation covers the digestive and circulatory systems, enzymes, and — for Triple students — plant tissues and transport, all of which are exam favourites because they combine recall with application: you're often given an unfamiliar scenario and asked to apply what you know about enzyme action or heart structure to explain it. Infection and response covers pathogens, the immune system, vaccination, and drug development, a topic that rewards precise use of key terms (pathogen vs. disease, antigen vs. antibody) since examiners specifically check for correct terminology.

Bioenergetics (photosynthesis and respiration) and homeostasis (the nervous system, hormones, and control of blood glucose) are two of the most heavily tested topics, and both benefit from practising labelled diagrams — drawing the reflex arc or the structure of a nephron from memory reveals gaps that reading alone won't. Homeostasis questions also frequently ask you to interpret graphs of hormone levels over time, so practising graph-reading specifically for this topic is worthwhile.

Inheritance, variation and evolution covers DNA structure, genetic crosses (Punnett squares), natural selection, and classification — a topic where students often understand the theory but lose marks by miscompleting a genetic diagram or muddling genotype and phenotype. Ecology closes the course by scaling everything up to populations, food webs, and the impact of environmental change, often through data-response questions based on real fieldwork techniques like quadrats and transects. As with the other sciences, required practicals are directly examinable, so know the method, the controlled variables, and likely sources of error for each one rather than only the result.

Topics that come up most

- Cell structure & transport
- Enzymes & the digestive system
- Photosynthesis & respiration
- Homeostasis (nerves & hormones)
- Genetics & Punnett squares
- Natural selection & evolution
- Ecosystems, food webs & fieldwork

Exam technique

Use exact biological terms, not everyday synonyms — "diffusion" and "osmosis" are not interchangeable with "moving" or "absorbing". Practise drawing and labelling key diagrams from memory, not just recognising them.

Common mistakes

Confusing genotype and phenotype, mixing up mitosis and meiosis, describing a graph instead of explaining the biology behind it, and vague answers like "it helps the plant grow" instead of a mechanism.