GCSE Biology Knowledge Checklist

Contents

For each topic, rate your understanding:

✅ Secure | ⚠️ Partial | 👎 Insecure | ❌ Not Taught yet

All topics for all tiers are included.

Separate Science (Triple) topics are labelled.

Completing this checklist will help you to know where your strengths and weaknesses lie and help me to assess your needs and personalise your tuition sessions.

1. Cell Biology

- ☐ Cell structure (animal, plant, bacterial cells)
- ☐ Microscopy and magnification
- ☐ Cell division (mitosis and the cell cycle)
- ☐ Stem cells and their uses
- ☐ Transport in cells (diffusion, osmosis, active transport)
- ☐ Culturing Microorganisms (BIOLOGY ONLY)

2. Organisation

- ☐ Digestive system structure and function
- ☐ Enzymes and their actions
- ☐ Circulatory system and the heart
- ☐ Blood vessels and blood components
- ☐ Health issues and the effect of lifestyle
- ☐ Cancer and its causes
- ☐ Plant tissues and organs (xylem, phloem, stomata)

3. Infection and Response

- ☐ Pathogens and disease
- ☐ Bacterial, viral, fungal, and protist diseases
- ☐ Human defence systems
- ☐ Vaccination, antibiotics and painkillers
- ☐ Drug development and testing
- ☐ Monoclonal Antibodies (BIOLOGY ONLY + Higher Tier)
- ☐ Plant diseases (BIOLOGY ONLY)

4. Bioenergetics

- ☐ Photosynthesis reaction and rates
- ☐ Photosynthesis limiting factors, inverse square law and applications (Higher Tier)
- ☐ Uses of glucose from photosynthesis
- ☐ Respiration (aerobic and anaerobic)
- ☐ Response to exercise
- ☐ Metabolism and enzyme-controlled reactions

5. Homeostasis and Response

- ☐ Principles of homeostasis
- ☐ Nervous system and reflex arcs
- ☐ The brain and eye (BIOLOGY ONLY)
- ☐ Control of body temperature (BIOLOGY ONLY)
- ☐ Hormonal coordination (menstrual cycle, blood glucose)
- ☐ Maintaining water and nitrogen balance (kidneys) (BIOLOGY ONLY)
- ☐ Hormones in human reproduction
- ☐ Use of hormones to treat infertility (Higher Tier)
- ☐ Plant hormones (BIOLOGY ONLY)

6. Inheritance, Variation and Evolution

- ☐ Sexual and asexual reproduction
- ☐ Meiosis
- ☐ DNA and the genome
- ☐ DNA structure (BIOLOGY ONLY)
- ☐ Genetic inheritance (alleles, Punnett squares)
- ☐ Genetic disorders and family trees
- ☐ Variation and evolution
- ☐ Cloning (BIOLOGY ONLY)
- ☐ Selective breeding and genetic engineering
- ☐ Theories of evolution, speciation and Mendel (BIOLOGY ONLY)
- ☐ Evidence for evolution and extinction
- ☐ Resistant bacteria
- ☐ Classification

7. Ecology

- ☐ Levels of organisation (organism, population, community, ecosystem)
- ☐ Communities
- ☐ Biotic and abiotic factors
- ☐ Adaptations and interdependence
- ☐ Cycling of materials
- ☐ Decomposition (BIOLOGY ONLY)
- ☐ Sampling techniques and food chains
- ☐ Impact of environmental change (BIOLOGY ONLY)
- ☐ Biodiversity and waste management
- ☐ Global warming land use, and deforestation
- ☐ Maintaining ecosystems and conservation
- ☐ Trophic levels, pyramids of biomass (BIOLOGY ONLY)
- ☐ Food production (BIOLOGY ONLY)

8. Required Practical Skills

- ☐ Planning and conducting biology practicals
- ☐ Presenting and analysing biological data
- ☐ Drawing and interpreting graphs
- ☐ Evaluating methods and results