

Specification checklist

How to use: tick one box for each of the 97 spec points as you revise. Go back to the “Not yet” rows first, and keep going until every row is “Confident”.

The numbers are AQA's own spec references for 8461, and each note title links to its note on clockitwithsci.com. **Triple only** only in Triple Biology. Combined Science students can skip it. **Higher tier** only on the Higher tier papers. Foundation students can skip it.

Paper 1 1 hour 45 minutes • 100 marks

1 Cell biology

Cell structure **Spec 4.1.1**

Spec	What to know (the note)	Not yet	Nearly	Confident
4.1.1.1	Eukaryotes and prokaryotes	☐	☐	☐
4.1.1.2	Animal and plant cells; Required practical 1: using a light microscope	☐	☐	☐
4.1.1.3	Cell specialisation	☐	☐	☐
4.1.1.4	Cell differentiation	☐	☐	☐
4.1.1.5	Microscopy	☐	☐	☐
4.1.1.6	Culturing microorganisms; Culture calculations; Required practical 2: antiseptics and antibiotics Triple only	☐	☐	☐

Cell division **Spec 4.1.2**

Spec	What to know (the note)	Not yet	Nearly	Confident
4.1.2.1	Chromosomes	☐	☐	☐
4.1.2.2	Mitosis and the cell cycle	☐	☐	☐
4.1.2.3	Stem cells	☐	☐	☐

Transport in cells **Spec 4.1.3**

Spec	What to know (the note)	Not yet	Nearly	Confident
4.1.3.1	Diffusion; Surface area to volume ratio; Exchange surfaces	☐	☐	☐
4.1.3.2	Osmosis	☐	☐	☐
4.1.3.3	Active transport	☐	☐	☐

2 Organisation

Principles of organisation **Spec 4.2.1**

Spec	What to know (the note)	Not yet	Nearly	Confident
4.2.1	Cells, tissues, organs and organ systems; Size and scale	☐	☐	☐

Animal tissues, organs and organ systems **Spec 4.2.2**

Spec	What to know (the note)	Not yet	Nearly	Confident
4.2.2.1	The digestive system; Enzymes; Amylase, proteases and lipases; Bile; Required practical: food tests; Required practical: the effect of pH on amylase	☐	☐	☐
4.2.2.2	The heart and the double circulatory system; Controlling the heart rate; The lungs and gas exchange; Blood vessels	☐	☐	☐
4.2.2.3	Blood	☐	☐	☐

Spec	What to know (the note)	Not yet	Nearly	Confident
4.2.2.4	Coronary heart disease; Treating cardiovascular disease	☐	☐	☐
4.2.2.5	Health and disease; Handling data about disease	☐	☐	☐
4.2.2.6	Risk factors and causes; The effect of lifestyle on disease; The cost of non-communicable diseases; Using data about risk factors	☐	☐	☐
4.2.2.7	Cancer	☐	☐	☐

Plant tissues, organs and systems Spec 4.2.3

Spec	What to know (the note)	Not yet	Nearly	Confident
4.2.3.1	Plant tissues; The leaf as an organ	☐	☐	☐
4.2.3.2	Roots, xylem and phloem; Transpiration and stomata; Factors affecting the rate of transpiration	☐	☐	☐

3 Infection and response

Communicable diseases Spec 4.3.1

Spec	What to know (the note)	Not yet	Nearly	Confident
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	☐	☐	☐

Monoclonal antibodies Spec 4.3.2

Spec	What to know (the note)	Not yet	Nearly	Confident
4.3.2.1	Producing monoclonal antibodies Triple only Higher tier	☐	☐	☐
4.3.2.2	Uses of monoclonal antibodies Triple only Higher tier	☐	☐	☐

Plant disease Spec 4.3.3

Spec	What to know (the note)	Not yet	Nearly	Confident
4.3.3.1	Detection and identification of plant diseases Triple only	☐	☐	☐
4.3.3.2	Plant defence responses Triple only	☐	☐	☐

4 Bioenergetics

Photosynthesis Spec 4.4.1

Spec	What to know (the note)	Not yet	Nearly	Confident
4.4.1.1	The photosynthetic reaction	☐	☐	☐
4.4.1.2	Factors that affect the rate of photosynthesis; Interacting factors and the inverse square law; Required practical: light intensity and the rate of photosynthesis	☐	☐	☐
4.4.1.3	Uses of glucose from photosynthesis	☐	☐	☐

Respiration Spec 4.4.2

Spec	What to know (the note)	Not yet	Nearly	Confident
4.4.2.1	Aerobic and anaerobic respiration	☐	☐	☐
4.4.2.2	Response to exercise	☐	☐	☐
4.4.2.3	Metabolism	☐	☐	☐

Paper 2 1 hour 45 minutes • 100 marks**5 Homeostasis and response****Homeostasis** Spec 4.5.1

Spec	What to know (the note)	Not yet	Nearly	Confident
4.5.1	What homeostasis is; Parts of a control system	☐	☐	☐

The human nervous system Spec 4.5.2

Spec	What to know (the note)	Not yet	Nearly	Confident
4.5.2.1	Structure and function of the nervous system; Reflex actions and the reflex arc; Required practical: reaction time	☐	☐	☐
4.5.2.2	The brain Triple only	☐	☐	☐
4.5.2.3	The eye: structures and their functions; Accommodation; Defects of the eye Triple only	☐	☐	☐
4.5.2.4	Control of body temperature Triple only	☐	☐	☐

Hormonal coordination in humans Spec 4.5.3

Spec	What to know (the note)	Not yet	Nearly	Confident
4.5.3.1	The human endocrine system	☐	☐	☐
4.5.3.2	Control of blood glucose concentration; Type 1 and Type 2 diabetes	☐	☐	☐
4.5.3.3	Water balance and the effect of osmosis on cells; The kidneys and urea; ADH and water level; Kidney failure: dialysis and transplant Triple 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 Higher tier	☐	☐	☐
4.5.3.7	Adrenaline, thyroxine and negative feedback Higher tier	☐	☐	☐

Plant hormones Spec 4.5.4

Spec	What to know (the note)	Not yet	Nearly	Confident
4.5.4.1	Plant hormones, phototropism and gravitropism Triple only	☐	☐	☐
4.5.4.2	Uses of plant hormones Triple only Higher tier	☐	☐	☐

6 Inheritance, variation and evolution**Reproduction** Spec 4.6.1

Spec	What to know (the note)	Not yet	Nearly	Confident
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 Triple only	☐	☐	☐
4.6.1.4	DNA and the genome	☐	☐	☐
4.6.1.5	DNA structure Triple only	☐	☐	☐
4.6.1.6	Genetic inheritance	☐	☐	☐
4.6.1.7	Inherited disorders	☐	☐	☐

Spec	What to know (the note)	Not yet	Nearly	Confident
4.6.1.8	Sex determination	☐	☐	☐

Variation and evolution Spec 4.6.2

Spec	What to know (the note)	Not yet	Nearly	Confident
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 Triple only	☐	☐	☐

The development of understanding of genetics and evolution Spec 4.6.3

Spec	What to know (the note)	Not yet	Nearly	Confident
4.6.3.1	Theory of evolution Triple only	☐	☐	☐
4.6.3.2	Speciation Triple only	☐	☐	☐
4.6.3.3	The understanding of genetics Triple only	☐	☐	☐
4.6.3.4	Evidence for evolution	☐	☐	☐
4.6.3.5	Fossils	☐	☐	☐
4.6.3.6	Extinction	☐	☐	☐
4.6.3.7	Resistant bacteria	☐	☐	☐

Classification of living organisms Spec 4.6.4

Spec	What to know (the note)	Not yet	Nearly	Confident
4.6.4	The Linnaean system and binomial names; Developments in classification	☐	☐	☐

7 Ecology

Adaptations, interdependence and competition Spec 4.7.1

Spec	What to know (the note)	Not yet	Nearly	Confident
4.7.1.1	Communities	☐	☐	☐
4.7.1.2	Abiotic factors	☐	☐	☐
4.7.1.3	Biotic factors	☐	☐	☐
4.7.1.4	Adaptations	☐	☐	☐

Organisation of an ecosystem Spec 4.7.2

Spec	What to know (the note)	Not yet	Nearly	Confident
4.7.2.1	Producers, consumers and food chains; Sampling: distribution and abundance; Predator-prey cycles	☐	☐	☐
4.7.2.2	How materials are cycled	☐	☐	☐
4.7.2.3	Decomposition Triple only	☐	☐	☐
4.7.2.4	Impact of environmental change Triple only Higher tier	☐	☐	☐

Biodiversity and the effect of human interaction on ecosystems Spec 4.7.3

Spec	What to know (the note)	Not yet	Nearly	Confident
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	☐	☐	☐
4.7.3.6	Maintaining biodiversity	☐	☐	☐

Trophic levels in an ecosystem Spec 4.7.4

Spec	What to know (the note)	Not yet	Nearly	Confident
4.7.4.1	Trophic levels Triple only	☐	☐	☐
4.7.4.2	Pyramids of biomass Triple only	☐	☐	☐
4.7.4.3	Transfer of biomass Triple only	☐	☐	☐

Food production Spec 4.7.5

Spec	What to know (the note)	Not yet	Nearly	Confident
4.7.5.1	Factors affecting food security Triple only	☐	☐	☐
4.7.5.2	Farming techniques Triple only	☐	☐	☐
4.7.5.3	Sustainable fisheries Triple only	☐	☐	☐
4.7.5.4	Role of biotechnology Triple only	☐	☐	☐