

Specification checklist

How to use: tick one box for each of the 165 spec points as you revise. Go back to the “Not yet” rows first, and keep going until every row is “Confident”.

The numbers are Edexcel's own spec references for 1BI0, 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 Key concepts in biology

Cell structure and specialised cells **Spec 1.1-1.2**

Spec	What to know (the note)	Not yet	Nearly	Confident
1.1	Animal and plant cells; Bacterial cells	☐	☐	☐
1.2	Specialised cells	☐	☐	☐

Microscopy and measuring cells **Spec 1.3-1.6**

Spec	What to know (the note)	Not yet	Nearly	Confident
1.3	Changes in microscope technology	☐	☐	☐
1.4	Number, size and scale: estimations	☐	☐	☐
1.5	Units: milli, micro, nano and pico	☐	☐	☐
1.6	Core practical: using a microscope	☐	☐	☐

Enzyme action and activity **Spec 1.7-1.11**

Spec	What to know (the note)	Not yet	Nearly	Confident
1.7	How enzymes work	☐	☐	☐
1.8	Denaturing enzymes	☐	☐	☐
1.9	Temperature, substrate concentration and pH	☐	☐	☐
1.10	Core practical: the effect of pH on enzyme activity	☐	☐	☐
1.11	Rate calculations for enzyme activity	☐	☐	☐

Biological catalysts, food tests and energy in food **Spec 1.12-1.14B**

Spec	What to know (the note)	Not yet	Nearly	Confident
1.12	The importance of enzymes	☐	☐	☐
1.13B	Core practical: food tests Triple only	☐	☐	☐
1.14B	Measuring the energy in food Triple only	☐	☐	☐

Transport in cells **Spec 1.15-1.17**

Spec	What to know (the note)	Not yet	Nearly	Confident
1.15	Diffusion; Osmosis; Active transport	☐	☐	☐
1.16	Core practical: osmosis in potatoes	☐	☐	☐
1.17	Percentage gain and loss of mass	☐	☐	☐

2 Cells and control

Mitosis and cancer Spec 2.1-2.4

Spec	What to know (the note)	Not yet	Nearly	Confident
2.1	The cell cycle and mitosis	☐	☐	☐
2.2	Why mitosis is important	☐	☐	☐
2.3	What mitosis produces	☐	☐	☐
2.4	Cancer	☐	☐	☐

Growth, differentiation and stem cells Spec 2.5-2.9

Spec	What to know (the note)	Not yet	Nearly	Confident
2.5	Growth in animals and plants	☐	☐	☐
2.6	Cell differentiation	☐	☐	☐
2.7	Percentile charts	☐	☐	☐
2.8	Stem cells and meristems	☐	☐	☐
2.9	Stem cells in medicine	☐	☐	☐

Neurones and reflexes Spec 2.13-2.14

Spec	What to know (the note)	Not yet	Nearly	Confident
2.13	Receptors and the nervous pathway; Neurone structure; Synapses; Investigating reaction times	☐	☐	☐
2.14	Reflex arcs; Investigating reaction times	☐	☐	☐

The brain Spec 2.10B-2.12B

Spec	What to know (the note)	Not yet	Nearly	Confident
2.10B	Structures and functions of the brain Triple only	☐	☐	☐
2.11B	Investigating the brain with scans Triple only Higher tier	☐	☐	☐
2.12B	Limitations in treating nervous system damage Triple only Higher tier	☐	☐	☐

The eye Spec 2.15B-2.17B

Spec	What to know (the note)	Not yet	Nearly	Confident
2.15B	Structure and function of the eye Triple only	☐	☐	☐
2.16B	Defects of the eye Triple only	☐	☐	☐
2.17B	Correcting eye defects Triple only	☐	☐	☐

3 Genetics

Reproduction and meiosis Spec 3.1B-3.3

Spec	What to know (the note)	Not yet	Nearly	Confident
3.1B	Asexual reproduction Triple only	☐	☐	☐
3.2B	Sexual reproduction Triple only	☐	☐	☐
3.3	Meiosis	☐	☐	☐

DNA and the genome Spec 3.4-3.6

Spec	What to know (the note)	Not yet	Nearly	Confident
3.4	The structure of DNA	☐	☐	☐
3.5	The genome and genes	☐	☐	☐
3.6	Extracting DNA from fruit	☐	☐	☐

Protein synthesis and gene variants Spec 3.7B-3.10B

Spec	What to know (the note)	Not yet	Nearly	Confident
3.7B	From base order to protein shape Triple only Higher tier	☐	☐	☐
3.8B	Protein synthesis: transcription and translation Triple only Higher tier	☐	☐	☐
3.9B	Genetic variants in non-coding DNA Triple only Higher tier	☐	☐	☐
3.10B	Genetic variants in coding DNA Triple only Higher tier	☐	☐	☐

Inheritance Spec 3.11B-3.18B

Spec	What to know (the note)	Not yet	Nearly	Confident
3.11B	Gregor Mendel Triple only	☐	☐	☐
3.12	Alleles and inherited differences	☐	☐	☐
3.13	Key genetic terms	☐	☐	☐
3.14	Monohybrid inheritance	☐	☐	☐
3.15	Sex determination	☐	☐	☐
3.16	Calculating and analysing outcomes	☐	☐	☐
3.17B	ABO blood groups Triple only	☐	☐	☐
3.18B	Sex-linked genetic disorders Triple only Higher tier	☐	☐	☐

Variation, mutations and the Human Genome Project Spec 3.19-3.23

Spec	What to know (the note)	Not yet	Nearly	Confident
3.19	Features controlled by multiple genes	☐	☐	☐
3.20	Causes of variation	☐	☐	☐
3.21	The Human Genome Project	☐	☐	☐
3.22	Mutations and genetic variation	☐	☐	☐
3.23	Mutations and genetic variation	☐	☐	☐

4 Natural selection and genetic modification

Darwin, natural selection and antibiotic resistance Spec 4.1B-4.3

Spec	What to know (the note)	Not yet	Nearly	Confident
4.1B	The work of Darwin and Wallace Triple only	☐	☐	☐
4.2	Evolution by natural selection	☐	☐	☐
4.3	Resistant organisms and antibiotic resistance	☐	☐	☐

Evidence for evolution and classification Spec 4.4-4.7

Spec	What to know (the note)	Not yet	Nearly	Confident
4.4	Fossil evidence for human evolution	☐	☐	☐
4.5	Stone tools	☐	☐	☐
4.6B	The pentadactyl limb Triple only	☐	☐	☐
4.7	Five kingdoms and three domains	☐	☐	☐

Selective breeding and tissue culture Spec 4.8-4.9B

Spec	What to know (the note)	Not yet	Nearly	Confident
4.8	Selective breeding	☐	☐	☐
4.9B	Tissue culture Triple only	☐	☐	☐

Genetic engineering Spec 4.10–4.12B

Spec	What to know (the note)	Not yet	Nearly	Confident
4.10	What is genetic engineering?	☐	☐	☐
4.11	The main stages of genetic engineering Higher tier	☐	☐	☐
4.12B	GM organisms and crop plants Triple only	☐	☐	☐

Agriculture and evaluating biotechnology Spec 4.13B–4.14

Spec	What to know (the note)	Not yet	Nearly	Confident
4.13B	Agricultural solutions for a growing population Triple only	☐	☐	☐
4.14	Evaluating genetic engineering and selective breeding	☐	☐	☐

5 Health, disease and the development of medicines

Health and disease Spec 5.1–5.3

Spec	What to know (the note)	Not yet	Nearly	Confident
5.1	What is health?	☐	☐	☐
5.2	Communicable and non-communicable diseases	☐	☐	☐
5.3	How one disease can lead to another	☐	☐	☐

Pathogens and infections Spec 5.4–5.8

Spec	What to know (the note)	Not yet	Nearly	Confident
5.4	What is a pathogen?	☐	☐	☐
5.5	Common infections	☐	☐	☐
5.6	How pathogens spread and how to control them	☐	☐	☐
5.7B	The lifecycle of a virus Triple only	☐	☐	☐
5.8	Sexually transmitted infections	☐	☐	☐

Plant defences and plant disease Spec 5.9B–5.11B

Spec	What to know (the note)	Not yet	Nearly	Confident
5.9B	Physical barriers in plants Triple only	☐	☐	☐
5.10B	Chemical defences in plants Triple only	☐	☐	☐
5.11B	Detecting and identifying plant diseases Triple only Higher tier	☐	☐	☐

Human defences and immunity Spec 5.12–5.15B

Spec	What to know (the note)	Not yet	Nearly	Confident
5.12	Physical barriers and chemical defences	☐	☐	☐
5.13	The specific immune system	☐	☐	☐
5.14	Immunisation	☐	☐	☐
5.15B	Advantages and disadvantages of immunisation Triple only	☐	☐	☐

Antibiotics, culturing microorganisms and new medicines Spec 5.16–5.22B

Spec	What to know (the note)	Not yet	Nearly	Confident
5.16	Antibiotics	☐	☐	☐
5.17B	Aseptic techniques Triple only	☐	☐	☐
5.18B	Core practical: antiseptics, antibiotics and plant extracts Triple only	☐	☐	☐
5.19B	Calculating cross-sectional areas Triple only	☐	☐	☐
5.20	Developing new medicines	☐	☐	☐
5.21B	Producing monoclonal antibodies Triple only Higher tier	☐	☐	☐
5.22B	Uses of monoclonal antibodies Triple only Higher tier	☐	☐	☐

Non-communicable diseases Spec 5.23-5.25

Spec	What to know (the note)	Not yet	Nearly	Confident
5.23	Causes of non-communicable diseases	☐	☐	☐
5.24	Lifestyle factors and non-communicable diseases	☐	☐	☐
5.25	Treating cardiovascular disease	☐	☐	☐

Paper 2 1 hour 45 minutes • 100 marks**6 Plant structures and their functions****Photosynthesis and limiting factors** Spec 6.1-6.6

Spec	What to know (the note)	Not yet	Nearly	Confident
6.1	Photosynthetic organisms as producers	☐	☐	☐
6.2	The photosynthesis reaction	☐	☐	☐
6.3	Limiting factors	☐	☐	☐
6.4	Interactions between limiting factors Higher tier	☐	☐	☐
6.5	Core practical: light intensity and photosynthesis	☐	☐	☐
6.6	Light intensity, distance and the inverse square law Higher tier	☐	☐	☐

Transport in plants Spec 6.7-6.10

Spec	What to know (the note)	Not yet	Nearly	Confident
6.7	Root hair cells	☐	☐	☐
6.8	Xylem and phloem	☐	☐	☐
6.9	Transpiration and stomata	☐	☐	☐
6.10	Translocation	☐	☐	☐

Leaves, water uptake and extreme environments Spec 6.11B-6.14B

Spec	What to know (the note)	Not yet	Nearly	Confident
6.11B	Leaf structure Triple only	☐	☐	☐
6.12	Factors affecting water uptake	☐	☐	☐
6.13	Rate calculations for transpiration	☐	☐	☐
6.14B	Plants in extreme environments Triple only	☐	☐	☐

Plant hormones Spec 6.15B-6.16B

Spec	What to know (the note)	Not yet	Nearly	Confident
6.15B	Plant hormones, phototropism and gravitropism Triple only	☐	☐	☐
6.16B	Commercial uses of plant hormones Triple only Higher tier	☐	☐	☐

7 Animal coordination, control and homeostasis**Hormones and the endocrine system** Spec 7.1-7.3

Spec	What to know (the note)	Not yet	Nearly	Confident
7.1	The endocrine system	☐	☐	☐
7.2	Adrenalin and fight or flight Higher tier	☐	☐	☐
7.3	Thyroxine and negative feedback Higher tier	☐	☐	☐

The menstrual cycle and fertility control Spec 7.4-7.8

Spec	What to know (the note)	Not yet	Nearly	Confident
7.4	The menstrual cycle	☐	☐	☐
7.5	How four hormones control the cycle Higher tier	☐	☐	☐
7.6	Hormonal contraception	☐	☐	☐
7.7	Evaluating hormonal and barrier methods	☐	☐	☐
7.8	Assisted reproductive technology Higher tier	☐	☐	☐

Homeostasis and temperature control Spec 7.9-7.12B

Spec	What to know (the note)	Not yet	Nearly	Confident
7.9	Maintaining a constant internal environment	☐	☐	☐
7.10B	Thermoregulation and osmoregulation Triple only	☐	☐	☐
7.11B	The skin and the hypothalamus Triple only	☐	☐	☐
7.12B	Responses to heat and cold Triple only	☐	☐	☐

Blood glucose and diabetes Spec 7.13-7.17

Spec	What to know (the note)	Not yet	Nearly	Confident
7.13	Insulin and blood glucose	☐	☐	☐
7.14	Glucagon Higher tier	☐	☐	☐
7.15	Type 1 diabetes	☐	☐	☐
7.16	Type 2 diabetes	☐	☐	☐
7.17	Body mass, BMI and type 2 diabetes	☐	☐	☐

The urinary system and the kidneys Spec 7.18B-7.22B

Spec	What to know (the note)	Not yet	Nearly	Confident
7.18B	The urinary system Triple only	☐	☐	☐
7.19B	The nephron: filtering and reabsorption Triple only	☐	☐	☐
7.20B	ADH and the collecting duct Triple only Higher tier	☐	☐	☐
7.21B	Treating kidney failure Triple only	☐	☐	☐
7.22B	Urea Triple only	☐	☐	☐

8 Exchange and transport in animals

Transport and exchange surfaces Spec 8.1-8.3

Spec	What to know (the note)	Not yet	Nearly	Confident
8.1	The need to transport substances	☐	☐	☐
8.2	Exchange surfaces, transport systems and surface area : volume ratio	☐	☐	☐
8.3	Alveoli and gas exchange	☐	☐	☐

Factors affecting the rate of diffusion Spec 8.4B-8.5B

Spec	What to know (the note)	Not yet	Nearly	Confident
8.4B	Factors affecting the rate of diffusion Triple only	☐	☐	☐
8.5B	Fick's law Triple only	☐	☐	☐

Blood and blood vessels Spec 8.6-8.7

Spec	What to know (the note)	Not yet	Nearly	Confident
8.6	The structure and function of blood	☐	☐	☐
8.7	The structure and function of blood vessels	☐	☐	☐

The heart and circulation Spec 8.8, 8.12

Spec	What to know (the note)	Not yet	Nearly	Confident
8.8	The heart and circulatory system	☐	☐	☐
8.12	Heart rate, stroke volume and cardiac output	☐	☐	☐

Respiration Spec 8.9-8.11

Spec	What to know (the note)	Not yet	Nearly	Confident
8.9	Cellular respiration	☐	☐	☐
8.10	Comparing aerobic and anaerobic respiration	☐	☐	☐
8.11	Core practical: the rate of respiration in living organisms	☐	☐	☐

9 Ecosystems and material cycles

Communities and interdependence Spec 9.1-9.4

Spec	What to know (the note)	Not yet	Nearly	Confident
9.1	Levels of organisation	☐	☐	☐
9.2	Abiotic and biotic factors	☐	☐	☐
9.3	Interdependence	☐	☐	☐
9.4	Parasitism and mutualism	☐	☐	☐

Fieldwork and sampling Spec 9.5-9.6

Spec	What to know (the note)	Not yet	Nearly	Confident
9.5	Core practical: quadrats and belt transects	☐	☐	☐
9.6	Estimating the number of organisms	☐	☐	☐

Energy transfer in ecosystems Spec 9.7B-9.8B

Spec	What to know (the note)	Not yet	Nearly	Confident
9.7B	Energy loss and pyramids of biomass Triple only	☐	☐	☐
9.8B	Efficiency and biomass calculations Triple only	☐	☐	☐

Human impacts, biodiversity and food security Spec 9.9-9.11B

Spec	What to know (the note)	Not yet	Nearly	Confident
9.9	Fish farming; Non-indigenous species; Eutrophication	☐	☐	☐
9.10	Benefits of maintaining biodiversity	☐	☐	☐
9.11B	Food security Triple only	☐	☐	☐

Material cycles Spec 9.12-9.15

Spec	What to know (the note)	Not yet	Nearly	Confident
9.12	Cycling of materials	☐	☐	☐
9.13	The carbon cycle	☐	☐	☐
9.14	The water cycle and potable water	☐	☐	☐
9.15	The nitrogen cycle	☐	☐	☐

Indicator species and decomposition Spec 9.16B-9.19B

Spec	What to know (the note)	Not yet	Nearly	Confident
9.16B	Indicator species and pollution Triple only Higher tier	☐	☐	☐
9.17B	Decomposition and food preservation Triple only	☐	☐	☐
9.18B	Decomposition and composting Triple only	☐	☐	☐
9.19B	Rate of decay calculations Triple only	☐	☐	☐