

Specification checklist

How to use: tick one box for each of the 85 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 XBI11, and each note title links to its note on clockitwithsci.com.

1 Molecules, Transport and Health

Water, carbohydrates and lipids Spec 1.1-1.5

Spec	What to know (the note)	Not yet	Nearly	Confident
1.1	Water as a solvent in transport	☐	☐	☐
1.2	Monosaccharides, disaccharides and polysaccharides	☐	☐	☐
1.3	Core practical 1: Benedict's reagent and iodine solution	☐	☐	☐
1.4	Glycosidic bonds: condensation and hydrolysis	☐	☐	☐
1.5(i)	Triglycerides and ester bonds	☐	☐	☐
1.5(ii)	Saturated and unsaturated lipids	☐	☐	☐

The heart, blood vessels and haemoglobin Spec 1.6-1.9

Spec	What to know (the note)	Not yet	Nearly	Confident
1.6	Why many animals have a heart and circulation	☐	☐	☐
1.7	Arteries, veins and capillaries	☐	☐	☐
1.8	Structure of the mammalian heart; The cardiac cycle	☐	☐	☐
1.9(i)	Haemoglobin and the transport of oxygen and carbon dioxide	☐	☐	☐
1.9(ii)	The oxygen dissociation curve, the Bohr effect and fetal haemoglobin	☐	☐	☐

Cardiovascular disease and its causes Spec 1.10-1.14

Spec	What to know (the note)	Not yet	Nearly	Confident
1.10	Atherosclerosis	☐	☐	☐
1.11	Blood clotting and cardiovascular disease	☐	☐	☐
1.12	Risk factors for cardiovascular disease	☐	☐	☐
1.13	Dietary antioxidants and the risk of CVD	☐	☐	☐
1.14	Core practical 2: vitamin C content of food and drink	☐	☐	☐

Health risks, evidence and treatment Spec 1.15-1.20

Spec	What to know (the note)	Not yet	Nearly	Confident
1.15	Analysing data on illness and mortality	☐	☐	☐
1.16	Evaluating the design of studies	☐	☐	☐
1.17	Perception of risk	☐	☐	☐
1.18(i)	Blood cholesterol, HDL and LDL	☐	☐	☐
1.18(ii)	Evidence linking cholesterol and CVD	☐	☐	☐
1.19	Using scientific knowledge to reduce the risk of CHD	☐	☐	☐
1.20	Treatments for cardiovascular disease	☐	☐	☐

2 Membranes, Proteins, DNA and Gene Expression

Gas exchange, membranes and transport Spec 2.1-2.5

Spec	What to know (the note)	Not yet	Nearly	Confident
2.1	Gas exchange surfaces and Fick's law; The mammalian lung	☐	☐	☐
2.2	The structure and properties of cell membranes; Models of membrane structure and the evidence for them	☐	☐	☐
2.3	Core practical 3: membrane permeability, alcohol and temperature	☐	☐	☐
2.4	Osmosis and water potential	☐	☐	☐
2.5	Passive transport: diffusion, facilitated diffusion, channel and carrier proteins; Active transport, endocytosis and exocytosis	☐	☐	☐

Proteins and enzymes Spec 2.6-2.8

Spec	What to know (the note)	Not yet	Nearly	Confident
2.6	Amino acids, peptide bonds and polypeptides; Levels of protein structure and the bonds involved; Globular and fibrous proteins: haemoglobin and collagen	☐	☐	☐
2.7	Enzymes: mode of action and specificity	☐	☐	☐
2.8	Factors affecting the rate of enzyme-catalysed reactions; Core practical 4: the initial rate of enzyme-catalysed reactions	☐	☐	☐

DNA, the genetic code and gene expression Spec 2.9-2.14

Spec	What to know (the note)	Not yet	Nearly	Confident
2.9	The structure of mononucleotides, DNA and RNA	☐	☐	☐
2.10	DNA replication and the role of DNA polymerase; The Meselson-Stahl experiment	☐	☐	☐
2.11	The genetic code and the gene	☐	☐	☐
2.12	The genetic code and the gene	☐	☐	☐
2.13	Transcription; Translation, tRNA and ribosomes	☐	☐	☐
2.14	Gene mutations	☐	☐	☐

Inheritance, cystic fibrosis and genetic screening Spec 2.15-2.18

Spec	What to know (the note)	Not yet	Nearly	Confident
2.15	Genetic terms; Monohybrid inheritance and pedigree diagrams; Sex linkage and red-green colour blindness	☐	☐	☐
2.16	Cystic fibrosis	☐	☐	☐
2.17	Genetic screening: carriers, PGD and prenatal testing	☐	☐	☐
2.18	Ethical and social issues of genetic screening	☐	☐	☐

3 Cell Structure, Reproduction and Development

Cells, tissues and organelles Spec 3.1-3.6

Spec	What to know (the note)	Not yet	Nearly	Confident
3.1	Features common to all living cells	☐	☐	☐
3.2	Tissues, organs and organ systems	☐	☐	☐
3.3	Ultrastructure of eukaryotic cells	☐	☐	☐
3.4	Protein transport and extracellular enzymes	☐	☐	☐
3.5	Ultrastructure of prokaryotic cells	☐	☐	☐
3.6	Recognising organelles in electron micrographs	☐	☐	☐

Microscopy and measuring cells Spec 3.7, 3.8

Spec	What to know (the note)	Not yet	Nearly	Confident
3.7	Magnification and resolution; Staining specimens	☐	☐	☐
3.8	Core Practical 5: observing, drawing and measuring cells	☐	☐	☐

Chromosomes, meiosis and gametes Spec 3.9-3.13

Spec	What to know (the note)	Not yet	Nearly	Confident
3.9	Gene loci and linkage	☐	☐	☐
3.10	Meiosis and genetic variation	☐	☐	☐
3.11	Specialised mammalian gametes	☐	☐	☐
3.12	Fertilisation in mammals	☐	☐	☐
3.13	Fertilisation in flowering plants	☐	☐	☐

Mitosis and the cell cycle Spec 3.14-3.16

Spec	What to know (the note)	Not yet	Nearly	Confident
3.14	The cell cycle and mitosis	☐	☐	☐
3.15	Core Practical 6: root tip squash	☐	☐	☐
3.16	Calculating the mitotic index	☐	☐	☐

Stem cells, gene expression and phenotype Spec 3.17-3.21

Spec	What to know (the note)	Not yet	Nearly	Confident
3.17	Stem cells and potency; Using stem cells in medical therapies	☐	☐	☐
3.18	Differential gene expression and specialisation	☐	☐	☐
3.19	One gene, more than one protein	☐	☐	☐
3.20	Genotype, environment and epigenetics	☐	☐	☐
3.21	Multiple alleles, polygenic inheritance and variation	☐	☐	☐

4 Plant Structure and Function, Biodiversity and Conservation

Plant cells and cell walls Spec 4.1-4.4

Spec	What to know (the note)	Not yet	Nearly	Confident
4.1	Plant cell ultrastructure and its functions	☐	☐	☐
4.2	Plant cell ultrastructure and its functions	☐	☐	☐
4.3	Starch and cellulose	☐	☐	☐
4.4	Cell wall structure, secondary thickening and plant fibres	☐	☐	☐

Plant tissues, fibres and mineral nutrition Spec 4.5-4.9

Spec	What to know (the note)	Not yet	Nearly	Confident
4.5	Sclerenchyma fibres, xylem vessels and phloem	☐	☐	☐
4.6	Core practical 7: plant tissues under the light microscope	☐	☐	☐
4.7	Plant fibres, starch and sustainability	☐	☐	☐
4.8	Water and inorganic ions in plants	☐	☐	☐
4.9	Core practical 8: tensile strength of plant fibres	☐	☐	☐

Bacterial growth, plant medicines and drug testing Spec 4.10–4.13

Spec	What to know (the note)	Not yet	Nearly	Confident
4.10	Conditions required for bacterial growth	☐	☐	☐
4.11	Antimicrobial and therapeutic substances from plants	☐	☐	☐
4.12	Core practical 9: antimicrobial properties of plants and aseptic technique	☐	☐	☐
4.13	The development of drug testing	☐	☐	☐

Classification and biodiversity Spec 4.14–4.18

Spec	What to know (the note)	Not yet	Nearly	Confident
4.14	Classification and the three-domain system	☐	☐	☐
4.15	Biodiversity, endemism and human threats	☐	☐	☐
4.16	Biodiversity, endemism and human threats	☐	☐	☐
4.17	Measuring biodiversity: species richness and heterozygosity index	☐	☐	☐
4.18	Comparing habitats: index of diversity (D)	☐	☐	☐

Niche, allele frequency and conservation Spec 4.19–4.21

Spec	What to know (the note)	Not yet	Nearly	Confident
4.19	Niche and adaptations to the environment	☐	☐	☐
4.20(i)	The Hardy-Weinberg equation, mutation and natural selection	☐	☐	☐
4.20(ii)	The Hardy-Weinberg equation, mutation and natural selection	☐	☐	☐
4.20(iii)	Reproductive isolation and the formation of new species	☐	☐	☐
4.21	Evaluating zoos and seed banks in conservation	☐	☐	☐