

| | Half term 1 | Half term 2 | Half term 3 | Half term 4 | Half term 5 | Half term 6 |
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| Year 12 Biology | <p>Content delivered: Unit 2.1.1: Microscopy (light, TEM and SEM) Cell structure Using stage micrometers and eye piece graticules Magnification and resolution Ultrastructure of eukaryotes Protein synthesis Unit 2.1.2: Elements in biomolecules Condensation and hydrolysis reactions Monosaccharides, disaccharides & polysaccharides Triglycerides and phospholipids Hydrogen bonding Amino acids Polypeptides Levels of protein structure Inorganic ions Quantitative methods to determine concentration Methods of TLC</p> | <p>Content delivered: Unit 2.1.3: Structure of nucleotides Structure of ATP and ADP Forming and breaking phosphodiester bonds Structure of DNA Semi-conservative replication Genetic code Transcription and translation Unit 2.1.5: Role of membranes Fluid mosaic model Factors affecting structure and permeability of membranes Osmosis and diffusion Unit 2.1.4: Enzymes as catalysts Mechanisms of enzyme action Factors affecting enzyme activity Coenzymes Cofactors Enzyme inhibitors</p> | <p>Content delivered: Unit 2.1.6: Cell cycle Stages of mitosis Mitosis in life cycles Stages of meiosis Organisation of cells Features and differentiation of stem cells Erythrocytes and neutrophils Unit 3.1.1: Specialised exchange surfaces Features of efficient surfaces Mammalian gas exchange system Ventilation in mammals Spirometry</p> | <p>Content delivered: Unit 3.1.3: Transport systems in multicellular plants Dicotyledonous plants Transpiration Xerophytes Unit 3.1.1: Mechanisms of ventilation in fish Mechanisms of ventilation in insects Unit 3.1.2: Transport systems in multicellular organisms Circulatory systems Blood vessels</p> | <p>Content delivered: Unit 3.1.2: Forming tissue fluid Structure of the heart Cardiac cycle ECG Role of haemoglobin Oxygen dissociation curves Unit 5.2.1: Relationship between photosynthesis and respiration Structure of the chloroplast Photosynthetic pigments Light dependent reaction Light independent reaction Factors affecting photosynthesis Unit 5.1.1: Cell signalling Homeostasis</p> | <p>Content delivered: Unit 5.1.2: Metabolism Kidney Water potential Kidney failure Unit 5.1.4: Endocrine communication Adrenal glands Pancreas Controlling blood sugar Diabetes Unit 5.1.3: Receptors and nerve impulses Converting stimuli Structure of neurones Resting potential and action potential Synapses Neurotransmission Unit 5.1.5: Plant responses Auxins and apical dominance Gibberellins Commercial use of plant hormones</p> |
| <p>Key Words Level 2 Level 3</p> | <p>2.1.1: Electron micrograph, magnification, organelle, photomicrograph, resolution, graticule, rough/smooth endoplasmic reticulum, golgi apparatus, mitochondria, chloroplast, lysosome, cilia, undulipodia, ribosome, centriole, cytoskeleton, prokaryotic, eukaryotic 2.1.2: Condensation reaction, hydrolysis, monomer, polymer, glycosidic bond, macromolecule, phospholipid, amino acid, peptide bond, primary structure, secondary structure, tertiary structure, quaternary structure, fibrous protein, globular protein, prosthetic group, colorimeter</p> | <p>2.1.3: Double helix, monomer, nucleotide, polynucleotide, helicase. Polymerase, semi-conservative replication, gene, polypeptide, protein, transcription, translation 2.1.5: Fluid mosaic model, glycolipid, glycoprotein, plasma membrane, diffusion, facilitated diffusion, osmosis, water potential, plasmolysed, crenation, flaccid, turgid, endocytosis, exocytosis, active transport 2.1.4: Active site, catalyst, extracellular, intracellular, metabolic, product, substrate, cofactor, enzyme-substrate complex, specificity, competitive inhibition, non-competitive inhibition, prosthetic group, independent variable, dependent variable, control variable, validity, reproducibility, reliability, buffer, concentration, enzyme-substrate complex, denature</p> | <p>2.1.6: Cytokinesis, interphase, mitosis, chromatids, haploid, homologous chromosomes, prophase, metaphase, anaphase, telophase, meiosis, differentiation, epithelial cell, erythrocyte, neutrophil, genome, guard cell, palisade cell 3.1.1: Surface area, alveoli, bronchi, bronchioles, diaphragm, intercostal muscle, trachea, ventilation, cartilage, ciliated epithelium, elastic fibres, goblet cells, smooth muscle, breathing rate, tidal volume, spirometer, vital capacity,</p> | <p>3.1.3: Dicotyledonous plant, meristem, phloem, vascular tissue, xylem, companion cell, sieve tube, plasmodesmata, potometer, transpiration, adhesion, cohesion, hydrophyte, xerophyte, assimilate, sink, source, translocation, independent variable, dependent variable, control variable, reliability, reproducibility, validity 3.1.1: Buccal cavity, counter-current flow, filament, lamellae, operculum, spiracle, tracheal fluid 3.1.2: Double circulatory system, single circulatory system, transport, arteries, arteriole, capillaries, closed circulatory system, open circulatory system, veins, venules</p> | <p>3.1.2: Ostia, peristalsis, blood, hydrostatic pressure, lymph, oncotic pressure, plasma, tissue fluid, AV valves, cardiac muscle, SL valve, myocardial, septum, systemic circulation, cardiac cycle, systole, diastole 5.2.1: Autotrophic nutrition, granum, photosynthetic pigment, photosystem, stroma, thylakoid, chlorophyll, photolysis, photophosphorylation, electron carrier, RuBisCo, light intensity, water stress, photosynthometer, potometer 5.1.1: Cell signalling, stimulus, response, effector, homeostasis, receptor, ectotherm, endotherm, hypothalamus</p> | <p>5.1.2: Excretion, metabolic waste, hepatic artery, hepatic portal vein, ornithine cycle, catalase, cytochrome, detoxification, urea, deamination, nephron, ultrafiltration, selective reabsorption, descending/ascending limb, Loop of Henle, osmoreceptor, glomerulus 5.1.4: Endocrine, hormone, adenyl cyclase, adrenal cortex, adrenal medulla, adrenaline, mineralocorticoids, fasciculata, reticularis, beta cells, glucagon, insulin, hyper/hypoglycaemia, glycogenolysis, gluconeogenesis, diabetes mellitus 5.1.3: Pacinian corpuscle, receptor, transducer, depolarisation, neurone, myelinated, node of Ranvier, action potential, resting potential, generator potential, saltatory conduction, cholinergic synapse, neurotransmitter, summation 5.1.5: Alkaloid, pheromone, tannin, phototropism, geotropism, chemotropism, thigmotropism, thigmonasty, apical dominance, auxin, gibberellin, cytokinin</p> |
| <p>Where previous knowledge has occurred and future development KS2 → KS3 → KS4 → KS5</p> | <p>KS2: How the body works KS3: Year 7 cells KS3: Year 8 Elements and compounds KS4: Year 10 Cells (B1) KS5: Photosynthesis, respiration</p> | <p>KS2: Inheritance KS3: Year 7 Diffusion KS3: Year 8 Enzymes KS4: Year 10 Diffusion and osmosis (B1) KS4: Year 10 Enzymes (B2) KS4: Year 11 Genetics (B6) KS5: Respiration, inheritance</p> | <p>KS2: Parts of the body KS3: Year 7 Cells KS3; Year 8 Breathing KS4: Year 10 Mitosis and the cell cycle (B1) KS4: Year 11 Meiosis (B6) KS5: Cells, immunity</p> | <p>KS2: How water is transported in plants KS3: Year 9 Photosynthesis KS4: Year 10 The heart and blood (B2) KS4: Year 10 Photosynthesis (B4) KS5: Eukaryotic cells</p> | <p>KS2: How water is transported in plants KS3: Year 9 Photosynthesis KS4: Year 10 The heart and blood (B2) KS4: Year 10 Photosynthesis and respiration (B4) KS4: Year 11 Homeostasis (B5) KS5: Ultrastructure of cells</p> | <p>KS2: How animals get nutrition KS3: Year 8 Digestive system KS4: Year 11 Osmoregulation (B5) KS4: Year 11 Nerves and reflexes (B5) KS4: Year 11 Controlling blood sugar (B5) KS4: Year 11 Hormonal responses (B5) KS5: Biomolecules, cell structure</p> |
| <p>Common Misconceptions</p> | <p>2.1.1: Differences between micrometers and graticules 2.1.2: Identifying the locations of bonds</p> | <p>2.1.3: Confusion between DNA, mRNA and tRNA 2.1.5: That membranes are fully rigid 2.1.4: The effect of inhibitors on active sites</p> | <p>2.1.6: The stages of interphase 3.1.1: All animals have lungs</p> | <p>3.1.3: Plants need lots of water 3.1.2: All circulatory systems are the same</p> | <p>3.1.2: Shaping oxygen dissociation curves 5.2.1: Chlorophyll is the only photosynthetic pigment</p> | <p>5.1.2: Both kidneys are needed 5.1.4: You can get type I diabetes later in life 5.1.3: All stimuli illicit a response 5.1.5: Plants don't need hormones</p> |

