

	Half term 1	Half term 2	Half term 3	Half term 4	Half term 5	Half term 6
<b>Year 12 Biology</b>	<p><b>Content delivered:</b>  <b>Unit 2.1.1:</b>  Microscopy (light, TEM and SEM)  Cell structure  Using stage micrometers and eye piece graticules  Magnification and resolution  Ultrastructure of eukaryotes  Protein synthesis  <b>Unit 2.1.2:</b>  Elements in biomolecules  Condensation and hydrolysis reactions  Monosaccharides, disaccharides &amp; 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><b>Content delivered:</b>  <b>Unit 2.1.3:</b>  Structure of nucleotides  Structure of ATP and ADP  Forming and breaking phosphodiester  Structure of DNA  Semi-conservative replication  Genetic code  Transcription and translation  <b>Unit 2.1.5:</b>  Role of membranes  Fluid mosaic model  Factors affecting structure and permeability of membranes  Osmosis and diffusion  <b>Unit 2.1.4:</b>  Enzymes as catalysts  Mechanisms of enzyme action  Factors affecting enzyme activity  Coenzymes  Cofactors  Enzyme inhibitors</p>	<p><b>Content delivered:</b>  <b>Unit 2.1.6:</b>  Cell cycle  Stages of mitosis  Mitosis in life cycles  Stages of meiosis  Organisation of cells  Features and differentiation of stem cells  Erythrocytes and neutrophils  <b>Unit 3.1.1:</b>  Specialised exchange surfaces  Features of efficient surfaces  Mammalian gas exchange system  Ventilation in mammals  Spirometry</p>	<p><b>Content delivered:</b>  <b>Unit 3.1.3:</b>  Transport systems in multicellular plants  Dicotyledonous plants  Transpiration  Xerophytes  <b>Unit 3.1.1:</b>  Mechanisms of ventilation in fish  Mechanisms of ventilation in insects  <b>Unit 3.1.2:</b>  Transport systems in multicellular organisms  Circulatory systems  Blood vessels</p>	<p><b>Content delivered:</b>  <b>Unit 3.1.2:</b>  Forming tissue fluid  Structure of the heart  Cardiac cycle  ECG  Role of haemoglobin  Oxygen dissociation curves  <b>Unit 5.2.1:</b>  Relationship between photosynthesis and respiration  Structure of the chloroplast  Photosynthetic pigments  Light dependent reaction  Light independent reaction  Factors affecting photosynthesis  <b>Unit 5.1.1:</b>  Cell signalling  Homeostasis</p>	<p><b>Content delivered:</b>  <b>Unit 5.1.2:</b>  Metabolism  Kidney  Water potential  Kidney failure  <b>Unit 5.1.4:</b>  Endocrine communication  Adrenal glands  Pancreas  Controlling blood sugar  Diabetes  <b>Unit 5.1.3:</b>  Receptors and nerve impulses  Converting stimuli  Structure of neurones  Resting potential and action potential  Synapses  Neurotransmission  <b>Unit 5.1.5:</b>  Plant responses  Auxins and apical dominance  Gibberellins  Commercial use of plant hormones</p>
<p><b>Key Words</b>  <b>Level 2</b>  <b>Level 3</b></p>	<p><b>2.1.1:</b> Electron micrograph, magnification, organelle, photomicrograph, resolution, graticule, rough/smooth endoplasmic reticulum, golgi apparatus, mitochondria, chloroplast, lysosome, cilia, undulipodia, ribosome, centriole, cytoskeleton, prokaryotic, eukaryotic  <b>2.1.2:</b> 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><b>2.1.3:</b> Double helix, monomer, nucleotide, polynucleotide, helicase. Polymerase, semi-conservative replication, gene, polypeptide, protein, transcription, translation  <b>2.1.5:</b> Fluid mosaic model, glycolipid, glycoprotein, plasma membrane, diffusion, facilitated diffusion, osmosis, water potential, plasmolysed, crenation, flaccid, turgid, endocytosis, exocytosis, active transport  <b>2.1.4:</b> 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><b>2.1.6:</b> Cytokinesis, interphase, mitosis, chromatids, haploid, homologous chromosomes, prophase, metaphase, anaphase, telophase, meiosis, differentiation, epithelial cell, erythrocyte, neutrophil, genome, guard cell, palisade cell  <b>3.1.1:</b> 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><b>3.1.3:</b> 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  <b>3.1.1:</b> Buccal cavity, counter-current flow, filament, lamellae, operculum, spiracle, tracheal fluid  <b>3.1.2:</b> Double circulatory system, single circulatory system, transport, arteries, arteriole, capillaries, closed circulatory system, open circulatory system, veins, venules</p>	<p><b>3.1.2:</b> 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  <b>5.2.1:</b> Autotrophic nutrition, granum, photosynthetic pigment, photosystem, stroma, thylakoid, chlorophyll, photolysis, photophosphorylation, electron carrier, RuBisCo, light intensity, water stress, photosynthometer, potometer  <b>5.1.1:</b> Cell signalling, stimulus, response, effector, homeostasis, receptor, ectotherm, endotherm, hypothalamus</p>	<p><b>5.1.2:</b> 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  <b>5.1.4:</b> Endocrine, hormone, adenyl cyclase, adrenal cortex, adrenal medulla, adrenaline, mineralocorticoids, fasciculata, reticularis, beta cells glucagon, insulin, hyper/hypoglycaemia, glycogenolysis, gluconeogenesis, diabetes mellitus  <b>5.1.3:</b> Pacinian corpuscle, receptor, transducer, depolarisation, neurone, myelinated, node of Ranvier, action potential, resting potential, generator potential, saltatory conduction, cholinergic synapse, neurotransmitter, summation  <b>5.1.5:</b> Alkaloid, pheromone, tannin, phototropism, geotropism, chemotropism, thigmotropism, thigmonasty, apical dominance, auxin, gibberellin, cytokinin</p>
<p><b>Where previous knowledge has occurred and future development</b>  <b>KS2 → KS3 → KS4 → KS5</b></p>	<p>KS2: X  KS3: Year 7 cells  KS3: Year 8 Elements and compounds  KS4: Year 10 Cells (B1)  KS5: Photosynthesis, respiration</p>	<p>KS2: X  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><b>Common Misconceptions</b></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>

<b>Literacy</b>	Scientific writing (HSW): PAG 9 NHTW reviews as starter activities	Scientific writing (HSW): PAG 8 Scientific writing (HSW): PAG 5 NHTW reviews as starter activities	Scientific writing (HSW): PAG 4 Scientific writing (HSW): PAG 1 Scientific writing (HSW): PAG 10 NHTW reviews as starter activities	Scientific writing (HSW): PAG 5 NHTW reviews as starter activities	Scientific writing (HSW): PAG 4 Scientific writing (HSW): PAG 6 NHTW reviews as starter activities	NHTW reviews as starter activities
<b>Numeracy</b>	Rearranging equations Drawing and interpreting graphs Converting units	Drawing and interpreting graphs Calculating means Rearranging formula	Standard form Interpreting graphs	Standard form Converting units	Rearranging formula Calculating means Drawing and interpreting graphs	Standard form Converting units
<b>Homework</b>	Completion of Doodle section quizzes	Completion of Doodle section quizzes	Completion of Doodle section quizzes	Completion of Doodle section quizzes	Completion of Doodle section quizzes	Completion of Doodle section quizzes
<b>Assessment this half-term</b>	PAG 9 2.1 mini test 2.2 min test	PAG 8 PAG 5 Unit 2 mini test	PAG 4 PAG 1 PAG 10 Unit 2 full test Unit 3 mini test	PAG 5 Unit 3 mini test	PAG 2 PAG 6 Unit 3 full test Unit 5 mini test	Mock exams 2 x paper 1
<b>Career opportunities Employment Links</b>	LIFE SKILLS: Understanding how microscopes work EMPLOYMENT: Microbiologist	LIFE SKILLS: Understanding the role of DNA EMPLOYMENT: Geneticist	LIFE SKILLS: Understanding the importance of enzymes in everyday things e.g. washing powder EMPLOYMENT: Phlebotomist	LIFE SKILLS: Understanding how plants transport water EMPLOYMENT: Physiotherapist	LIFE SKILLS: Understanding how the heart works EMPLOYMENT: Cardiovascular surgeon	LIFE SKILLS: Understanding reflex actions EMPLOYMENT: Healthcare professional
<b>Enrichment</b>				Nancy Rothwell Award		Chester Zoo visit
<b>Practical activities/HSW</b>	PAG 9: Quantitative and qualitative testing Microscopy	PAG 8: Factors affecting membranes PAG 5: Determining unknown concentrations	PAG 4: Factors affecting enzyme activity PAG 1: Root tip squash mitosis PAG 10: Spirometry	Microscopy of stained xylem and phloem PAG 5: Using a potometer	PAG 2: Heart dissection PAG 6: TLC	
<b>Employability Skills</b>	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> Staying positive	<b>Aiming high</b> Creativity Leadership Listening <b>Presenting</b> Problem solving Staying positive	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> Staying positive	<b>Aiming high</b> Creativity Leadership Listening Presenting Problem solving Staying positive	<b>Aiming high</b> Creativity Leadership Listening <b>Presenting</b> <b>Problem solving</b> Staying positive	<b>Aiming high</b> Creativity Leadership Listening Presenting <b>Problem solving</b> Staying positive
<b>IT Skills</b>	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes	IT1 & IT2: Appropriate websites and research for homework as well as recall quizzes
<b>Notes/developments /standardisation comments</b>						