

## Year 12 - A Level Biology

Week	Topic	2 x hours per week	Topic	3 x hours per week
1		Buffer		
2	Microscopy	Microscopy - Types of microscopes (a-f)	Water	Biochem basics (+ water)
3		Microscopy - Euk and Prok (g+h)	Proteins and enzymes	Protein structure (primary, secondary and tertiary structure) + Fibrous and globular proteins (k-p) PAG 9 – Protein (biuret) biochem test
4		Microscopy (i-k) (Suitability convos buffer lesson – protein synthesis and exam questions)		Enzymes (a-c) (Role and mechanism) Enzymes (d) (Factors the affect enzyme activity – Investigation (substrate conc, temp, pH) pH – Use PH probes for PAG 10
5		Microscopy - Mag calcs (i-k)		Enzymes (d) (Factors the affect enzyme activity) - Explanations and rate calculations
6		Microscopy Calibration and drawing (i-k)		Enzymes (d) (Factors the affect enzyme activity) PAG4 – PAG10 – Substrate conc and serial dilution
7		Microscopy test + Lipids and phospholipids (h-j) Including PAG 5 - Emulsion test		Enzymes (e + f) (Co-enzymes, cofactors, prosthetic groups and inhibitors) pH – Use PH probes for Could do amylase enzyme practical in spotting tiles
8	Lipids	Review test + Lipids and phospholipids (h-j)		
9	Membrane	Biological membranes (a-b) Factors affecting membrane structure and permeability (c) PAG5.1 – The effect of temperature on membrane permeability (beetroot)	Carbs	PAG6 – Chromatography – amino acids (test for enzymes / proteins)
10		Movement of molecules across membranes and diffusion rates in model cells (d-e)		Carbohydrates structure + Biochemical test including qualitative Benedict's (PAG 9) (q-r) PAG 5.2 Quantitative Benedict's + (Biochem revision)
11		Osmosis PAG8.1 Working out the water potential of a potato		Nucleic acids Structure of nucleotides, ATP and DNA (a-d)
12		Membranes and transport revision and test	Nucleic acids	Semi conservative replication € (f-g) Transcription and translation
13		Cell cycle, mitosis (spec points a,b,c,e)		Start module 4 Disease prevention, inflammation + PHAGOCYTOSIS (a-e)
14		Recap of spec point c and PAG1.1 Microscopy and -Stages of mitosis		
15				
16	Cell division	Recap of spec point c and PAG1.1 Microscopy and -Stages of mitosis	Disease	Specific immune system (f,g) Know the difference between neutrophils, lymphocytes, monocytes Chi Squared example blood Memory cells and immunity +Antibodies (h,i,j) and plasticine animations
17		(f-g) Meiosis (h-i) Specialised cells (m) Stem cells and their uses (inner cell mass etc) Revision Set PAG 11&12 Stem cells research task		Antibiotics, resistance and Set up PAG 7.1 Bacteria and antibiotics
18		(a) The need for specialised exchange surfaces (b+c) Features of specialised exchange surfaces – Alveoli and structures of mammalian gaseous exchange system Possible PAG1 / 2 Lung dissection and drawing and slides of lung tissue		Review PAG7 New sources of medicines, personalised medicines, synthetic biology (m)
19				
20		Exams		
21		(d+e) Ventilation in mammals and spirometer (PAG 10) (plus lung diseases)		Classification: 5 Kingdoms, binomial naming (a-c)
22	Exchange surfaces	(G+H) Ventilation in fish and insects (PAG2) – Mackrel and dissection kit (G+H) Comparison of ventilation and exchange surfaces of fish and insects and mammals & exam questions Collect in PAG 11&12 Stem cells research task	Classific ation	3 Domains, phylogeny and molecular evidence for classification (c+d)
23		(A-C) Need for transport systems, and blood vessels	Biodiversity	Evolution by natural selection and evidence (h,i) Variation (MATHS /- standard deviation + Spearman's rank / t-test) and adaptations (f+g)
24		(c+d) Tissue fluid formation and the lymphatic system		(a-d) Biodiversity, richness, evenness, and Simpsons index and Genetic diversity assessment (e) (f-i) Factors effecting biodiversity In and ex situ, seedbanks etc Reasons for maintaining biodiversity
25		PAG 2.1 – Heart dissection and drawing		Ways of maintaining biodiversity
26		(f-h) Cardiac cycle and pressure changes		Biodiversity test
27				
28	Easter	(f-h) SAN / AVN etc and ECGs	Transport in plants	Review test systems in plants (PAG 1+/2) Looking at plant sections (a-b) Transport systems / vascular
29		(l,i) Haemoglobin and dissociation curves (A)		(C) Transpiration and factors that affect transpiration rate (D) Measuring transpiration rate PAG5/11 – Potometer, Vaseline, fans, Laurel, stop clocks, rulers, permanent pens, lamps etc
30		Exchange and transport in animals test and The wonderful world of blood		(e) Xerophytes, hydrophytes + exam questions
31		Review test and Kahoot / revision		(f) Translocation and revision
32		Buffer		
33		Y12 TWILIGHT EXAMS		
34	Ecosystems	Ecosystems intro – Key terms, Abiotic and biotic factors (rocky shore, tree, playing field), trophic levels, food chains, webs and pyramids basics (a)	Photosynthesis	GCSE photosynthesis quiz / test (include cell and leaf structure)
35		Energy (biomass) transfers through food chains and increasing productivity (b)		Photosynthesis intro Early earth Pigments - function Chloroplast structure
36		Carbon cycle ©		Pigments and T.C. (PAG 6)
37		Nitrogen cycle ©		LDR + HCL reaction (PAG6 4 / 11)
38		Sampling (Y12 and Y13)		Wavelength of light practical (PAG 4/11)
39		Sampling (random) or succession!		LIR Limiting factors of photosynthesis
40		Buffer		

## Year 13 - A Level Biology

Week	Topic	2 x hours per week	Topic	3 x hours per week
1		Buffer		
2	Samp	Sampling (y12 and y13 theory)	Photo	Photosynthesis and wavelength of light and limiting factors
3		Succession + revision		Photosynthesis test
4		Scarborough		
5	Homeostasis	Ecosystems test	Respiration	Respiration
6		Homeostasis and negative feedback		(A,B) Respiration introduction, ATP and structure of mitochondria
7		Endocrine system. Hormones, glands, adrenal gland, pacrease and glucose req		(C,D) Glycolysis + link reaction
8		Diabetes and treatment		(I) Anaerobic respiration in eukaryotes and yeast
9	Plant responses	(a, b, c, d) Plant responses theory – Stresses, and responses (tropisms and nastic responses)	Homeostasis	(D-G) Krebs, co-enzymes and Oxidative phosphorylation
10		(a, b, c, d) Phototropism and gravitropism mechanism and evidence		(H) Chemiosmosis
11		(a, b, c, d) Apical dominance, gibberellins and abscission		(J,K) Energy values and respiratory quotients
12		(a, b, c, d) Stomata closure and seed germination		(I) Respiration practical investigations
13		Collect final data and - Commercial uses of plant hormones		PAG 12.1 – Yeast and tubing.
14		Cellular control		
15		(a) Y12 revision + mutations		
16	Cellular	(c) Homeobox genes and Hox genes	Extretion	Link together photosynthesis and respiration
17		(d) Importance of mitosis and apoptosis		Revision and Respiration test + review time
18		Cellular control test		Homeostasis
19		Genetics basics and monohybrid crosses		Nervous system
20	POI	Patterns of inheritance		(A – B) Role of receptors, structure and function of SRM neurones
21		Causes of variation (Different genes, new alleles, and random assortment in meiosis)		(C) Resting potential
22	POI	Chi-squared	Biotech	(C) Action potential, positive feedback, myelination and significance of frequency of impulses
23		Di-hybrid crosses		(D) Synapses structure and function and their importance in summation and control
24		Linkage		(G,H) Organisation of mammalian NS and structure of the brain
25		Epistasis		(I) Reflex actions,
26	Evolution	Populations and sustainability (set research task)		(I) Structure of muscle, the NMI, sliding filament model (can flow into next week too)
27		Evolution by natural selection and genetic drift		(J,K) Nerves and hormones working together (+adrenaline and cell signalling)
28	Evolution	Hardy-Weinberg principle		Opportunity for (PAG11.1 + 12) –Effect of exercise on HR – t test
29		Speciation		
30		Artificial selection		
31		Revision / Buffer		
32		Revision / Buffer		