Y12	Week	Topic	2 x hours per week	Topic	3 x hours per week
30/08/2021	1		Buffer		
06/09/2021	2	Microscopy	Microscopy - Types of microscopes (a-f)	Water	*Biochem basics (+ water)*
13/09/2021	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*
20/09/2021	4		Microscopy (i-k) (Suitability convos buffer lesson – protein synthesis and exam questions)		*Enzymes (a-c)* *(Role and mechanism)*
27/09/2021	5		Microscopy - Mag calcs (i-k)		*Enzymes (d)* *(Factors the affect enzyme activity – Investigation (substrate conc, temp, pH)* *pH – Use PH probes for PAG 10*
04/10/2021	6		Microscopy Calibration and drawing (i-k)		*Enzymes (d)* *(Factors the affect enzyme activity) - Explanations and rate calculations*
11/10/2021	7	Lipids	*Microscopy test + Lipids and phospholipids (h-j) Including PAG 5 - Emulsion test*		*Enzymes (d)* *(Factors the affect enzyme activity)* *PAG4 –PAG10 – Substrate conc and serial dilution*
18/10/2021	8		*Reviuew test + Lipids and phospholipids (h-j)*		*Enzymes (e + f)* *(Co-enzymes, cofactors, prosthetic groups and inhibitors)* *pH – Use PH probes for Could do amylase enzyme practical in spotting tiles*
October Half Term					
01/11/2021	9	Membrane	*Biological membranes (a-b)*		*PAG6 – Chromatography – amino acids (test for enzymes / proteins)*
08/11/2021	10		*Factors affecting membrane structure and permeability (c)* *PAG5.1 – The effect of temperature on membrane permeability (beetroot)*	Carbs	*Carbohydrates structure + Biochemical test including qualitative Benedict's (PAG 9) (q-r)*
15/11/2021	11		*Movement of molecules across membranes and diffusion rates in model cells (d-e)*		*PAG 5.2 Quantitative Benedict's* *+ (Biochem revision)*
22/11/2021	12		*Osmosis* *PAG8.1 Working out the water potential of a potato*	Nucleic acids	*Nucleic acids* *Structure of nucleotides, ATP and DNA (a-d)*
29/11/2021	13		*Membranes and transport revision and test*		*Semi conservative replication €*
06/12/2021	14		*Cell cycle, mitosis (spec points a,b,c,e)*		*(f-g) Transcription and translation*
13/12/2021	15		*Recap of spec point c* *and PAG1.1 Microscopy and -Stages of mitosis*		*Start module 4* *Disease prevention, inflammation +* *PHAGOCYTOSIS (a-e)*
Christmas Hols					
03/01/2021	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*
10/01/2021	17		(f-g) Meiosis		*Memory cells and immunity* *+Antibodies (h,i,j)* *and plasticine animations*
17/01/2021	18		*(h-l) 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*
24/01/2021	19		*(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)*
31/01/2021	20		Exams		
07/02/2021	21		*(d+e) Ventilation in mammals and spirometer (PAG 10) (plus lung diseases)*		*Classification: 5 Kingdoms, binomial naming (a-c)*
February Half Term					
21/02/2022	22	Exchange surfaces	*(G+H) Ventilation in fish and insects* *(PAG2) – Mackrel and dissection kit*	Classification	*3 Domains, phylogeny and molecular evidence for classification (c+d)*
28/02/2022	23		*(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*		*Evolution by natural selection and evidence (h,i)*
07/03/2022	24		*(A-C) Need for transport systems, and blood vessels*	Biodiversity	*Variation (MATHS /- standard deviation + Spearman's rank / t-test) and adaptations (f+g)*
14/03/2022	25		*(c+d) Tissue fluid formation and the lymphatic system*		*(a-d) Biodiversity, richness, evenness, and Simpsons index and Genetic diversity assessment (e)*
21/03/2022	26		*PAG 2.1 – Heart dissection and drawing*		*(f-i) Factors effecting biodiversity* *Ways of maintaining biodiversity* *In and ex situ, seedbanks etc* *Reasons for maintaining biodiversity*
28/03/2022	27		*(f-h) Cardiac cycle and pressure changes*		*Biodiversity test*
Easter hols				Easter	
18/04/2022	28		*(f-h) SAN / AVN etc and ECGs*	Transport in plants	*Review test* *(a-b) Transport systems / vascular systems in plants (PAG 1+/2)* *Looking at plant sections*
25/04/2022	29		*(I,j) 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*
02/05/2022	30		*Exchange and transport in animals test and The wonderful world of blood*		*(e) Xerophytes, hydrophytes + exam questions*
09/05/2022	31		*Review test and Kahoot / revision*		*(f) Translocation and revision*
16/05/2022	32		*Buffer*		
23/05/2022	33		*Y12 TWILIGHT EXAMS*		
May Half Term					
06/06/2022	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)* *Photosynthesis intro* *Early earth* *Pigments - function* *Chloroplast structure*
13/06/2022	35		*Energy (biomass) transfers through food chains and increasing productivity (b)*		*Pigments and TLC (PAG 6)*
20/06/2022	36		*Carbon cycle ©*		*LDR + Hill reaction (PAGG 4 / 11)*
27/06/2022	37		*Nitrogen cycle ©*		*Wavelength of light practical (PAG 4/11)*
04/07/2022	38		*Sampling (Y12 and Y13)*		*LIR*
11/07/2022	39		*Sampling (random) or succession!*		*Limiting factors of photosynthesis*
18/07/2022	40		*Buffer*		

Y13	Week	Topic	2 x hours per week	Topic	3 x hours per week
30/08/2021	1	Buffer			
06/09/2021	2	Samp	Sampling (y12 and y13 theory)	Photo	Photosynthesis and wavelength of light and limiting factors
13/09/2021	3		Succession + revision		Photosynthesis test
20/09/2021	4	Scarborough			
27/09/2021	5	Homeostasis	Ecosystems test Homeostasis Homeostasis and negative feedback Ectotherms and endotherms	Respiration	Respiration (A,B) Respiration introduction, ATP and structure of mitochondria (C,D) Glycolysis + link reaction (I) Anaerobic respiration in eukaryotes and yeast
04/10/2021	6		Daphnia practical?		(D-G) Krebs, co-enzymes and Oxidative phosphorylation (H) Chemiosmosis
11/10/2021	7		Endocrine system. Hormones, glands, adrenal gland, pacrease and glucose reg		(J,K) Energy values and respiratory quotients
18/10/2021	8		Diabetes and treatment		(I) Respiration practical investigations PAG 12.1 – Yeast and tubing.
October Half Term					
01/11/2021	9	Plant responses	(a, b, c, d) Plant responses theory – Stresses, and responses (tropisms and nastic responses)		Link together photosynthesis and respiration Revision and Respiration test + review time
08/11/2021	10		(a, b, c, d) Phototropism and gravitropism mechanism and evidence	Homeostasis	Homeostasis Nervous system (A – B) Role of receptors, structure and function of SRM neurones (C) Resting potential
15/11/2021	11		(a, b, c, d) Apical dominance, gibberellins and abscission		C) Action potential, positive feedback, myelination and significance of frequency of impulses
22/11/2021	12		(a, b, c, d) Stomata closure and seed germination		(D) Synapses structure and function and their importance in summation and control
29/11/2021	13		Collect final data and - Commercial uses of plant hormones		(G,H) Organisation of mammalian NS and structure of the brain (I) Reflex actions,
06/12/2021	14	control	Cellular control (a) Y12 revision + mutations		(I) Structure of muscle, the NMJ, sliding filament model (can flow into next week too)
13/12/2021	15		(b) Controlling gene expression (3 different levels)		(J,K) Nerves and hormones working together (+adrenaline and cell signalling) Opportunity for (PAG11.1 + 12) –Effect of exercise on HR – t test
Christmas Hols					
03/01/2021	16	Cellular	(c) Homeobox genes and Hox genes	Extretion	Homeostasis and animal responses test Excretion B) Excretion basics + Liver
10/01/2021	17		(d) Importance of mitosis and apoptosis		(c) Role of kidney and structure of nephrons PAG 2 Kidney dissection AND DRAWING
17/01/2021	18	POI	Cellular control test Patterns of inheritance Causes of variation (Different genes, new alleles, and random assortment in meiosis)		(C) Kidney cont. Loop of Henle, Slides of kidney tissue PAG1/2 – Slides of kidney tissue and microscopes EPGs and SMs
24/01/2021	19		Genetics basics and monohybrid crosses		E) Kidney failure, medical diagnosis GFR, Kidney transplants and dialysis
31/01/2021	20	Revision buffer			
07/02/2021	21	Y13 interim exams			
February Half Term					
21/02/2022	22	POI	Chi-squared		Pregnancy testing, anabolic steroids Mock body fluids QUAL prac from last year (PAG9)?
28/02/2022	23		Di-hybrid crosses		Excretion revision, test and review time
07/03/2022	24		Linkage	Biotech	(A-D) Cloning
14/03/2022	25		Epistasis		(E-H) Biotechnology
21/03/2022	26		Populations and sustainability (set research task)		(H) Factors affecting growth of microbes (PAG7 Streak plating and serial dilution calculations)
28/03/2022	27		Evolution Evolution by natural selection and genetic drift		(I) Immobilised enzymes uses (I) PAG 4 - Immobilising enzymes prac
Easter hols	Easter				
18/04/2022	28	Evolution	Hardy-Weinberg principle		(D,E) PCR, gel electrophoresis
25/04/2022	29		Speciation		(E) CF prac Natures Dice – PAG 6 Chromatography (electrophoresis) and fingerprinting
02/05/2022	30		Artificial selection		(A-C) Genome sequencing Sanger and others
09/05/2022	31		Revision / Buffer		Revision / Buffer
16/05/2022	32		Revision / Buffer		Revision / Buffer