SUBJECT:	Biology	**YEAR GROUP:**	12
COURSE:	A Level Biology (7401/7402)	**EXAM BOARD:**	AQA
SUBJECT INTENT:	*Year 12 builds the molecular and cellular foundations of the AQA A Level course. Mathematical skills (at least 10% of assessment) and the twelve required practicals underpinning the Practical Endorsement are embedded throughout, so that by the end of the year pupils are prepared for internal examinations covering the AS-level content.*		

TERM	TOPIC	CORE LEARNING	KEY CONCEPTS	SEQUENCING	SPECIFICATION LINK
Autumn	**3.1 Biological Molecules**	Carbohydrates, lipids and proteins; condensation and hydrolysis; enzyme action, kinetics and inhibition; digestion and absorption; nucleic acids, ATP and water; food tests.	● monomer / polymer ● enzyme specificity ● induced fit ● co-transport	Builds on GCSE molecules and enzymes; underpins photosynthesis, respiration and gene expression in Year 13. RP 1, 2 & 4.	3.1.1–3.1.8
	3.2 Cells (Structure)	Light and electron microscopy and magnification; cell ultrastructure and fractionation; prokaryotic cells and viruses.	● magnification / resolution ● organelle ● prokaryote / eukaryote	Builds on GCSE cell biology; underpins division, transport and immunity.	3.2.1
Spring	**3.2 Cells (Division, Membranes & Immunity)**	The cell cycle and mitosis; the fluid-mosaic membrane; diffusion, osmosis and active transport; antigens, the immune response, vaccination and viruses (HIV).	● mitosis / cell cycle ● water potential ● clonal selection	Applies organelle structure; mitosis is later contrasted with meiosis. RP 2 & 3.	3.2.1–3.2.4
Summer	**3.3 Exchange & Transport**	Surface area to volume ratio; gas exchange in organisms; mass transport in animals (heart, vessels, tissue fluid) and plants (xylem, phloem).	● SA : volume ratio ● counter-current ● cohesion-tension	Applies transport from Cells; the cardiovascular system returns in Homeostasis. RP 5.	3.3.1–3.3.4
	3.4 Genetic Information & Variation	DNA, genes and protein synthesis; meiosis and genetic variation; gene mutation and natural selection; species, taxonomy and biodiversity.	● transcription / translation ● meiosis / crossing over ● biodiversity index	Builds on DNA and mitosis; selection and speciation developed in Year 13. RP 6.	3.4.1–3.4.6
	Statistical & Fieldwork Skills; Year 12 Examinations	The t-test, Spearman's rank and chi-squared test; standard error and confidence intervals; fieldwork sampling; chromatography; internal end-of-year examinations.	● statistical tests ● confidence intervals ● quadrats / transects	Consolidates Paper 3 skills; applied to Populations in Year 13. RP 7 & 8.	Maths skills; 3.4.7

SUBJECT:	Biology	**YEAR GROUP:**	13
COURSE:	A Level Biology (7401/7402)	**EXAM BOARD:**	AQA
SUBJECT INTENT:	*Year 13 completes the AQA A Level specification, interleaving mathematical and practical skills and finishing the twelve required practicals for the Practical Endorsement, so that by the end of the spring term pupils are prepared for the terminal examinations (Papers 1, 2 and 3).*		

TERM	TOPIC	CORE LEARNING	KEY CONCEPTS	SEQUENCING	SPECIFICATION LINK
Autumn	**3.5 Energy Transfers (Photosynthesis & Respiration)**	Light-dependent and light-independent reactions and the Calvin cycle; aerobic and anaerobic respiration and ATP yield; limiting factors.	● photophosphorylation ● Calvin cycle ● glycolysis / Krebs	Applies ATP, enzymes and limiting factors from Year 12. RP 9 & 10.	3.5.1–3.5.2
	3.5 Energy Transfers (Ecosystems) & 3.7 Populations	Gross and net primary productivity; energy transfer between trophic levels; the nitrogen and phosphorus cycles; populations, competition and succession.	● productivity ● trophic efficiency ● succession / niche	Applies photosynthesis and respiration; fieldwork skills from Year 12 applied.	3.5.3–3.5.4, 3.7.4
Spring	**3.6 Responding to Change**	Response in plants and animals; receptors, nervous coordination and synapses; muscle contraction; homeostasis, blood glucose control and the kidney.	● action potential ● synaptic transmission ● osmoregulation / ADH	Applies membrane transport; links to the cardiac cycle from Year 12. RP 11.	3.6.1–3.6.6
	3.7 Genetics, Populations & Evolution	Monohybrid and dihybrid inheritance; the chi-squared test; the Hardy-Weinberg principle; genetic drift, selection and speciation.	● epistasis ● Hardy-Weinberg ● allopatric / sympatric	Extends meiosis and selection from Year 12 with quantitative genetics.	3.7.1–3.7.3
Summer	**3.8 Control of Gene Expression**	Transcription factors and epigenetics; stem cells and totipotency; sequencing, PCR and electrophoresis; recombinant DNA technology, medicine and bioethics.	● transcription factor ● PCR / electrophoresis ● recombinant DNA	Builds on DNA structure and mutation; prepares for university bioscience. RP 12.	3.8.1–3.8.4
	Revision & A Level Examinations	Synoptic revision across all eight topics; focus on embedded maths and Paper 3 practical-skills and data-handling questions; A Level examinations (Papers 1, 2 & 3).	● synoptic links ● maths skills ● Paper 3 practicals	Draws together content and all twelve required practicals from Years 12–13.	All 3.1–3.8