Year 12 Biology

	Term 1		Term 2	
Autumn	**Teacher A – Cells & Immune system**	**Teacher B – Biological Molecules**	**Teacher A**	**Teacher B - DNA**
	Eukaryotic Cells Prokaryotic Cells + Viruses Microscopes and Magnification Ultra centrifugation Required practical: Root tip squash (mitosis)	Monomers and Polymers Carbohydrates I Lipids Proteins Enzymes Biochemical Tests *Required Practical: Rate of an enzyme controlled reaction*	Antigens and Phagocytosis T cells and Cell mediated response B cells and Humoral Response Antibodies Natural and Passive Immunity HIV Antibodies in Medicine Required practical: The effect of alcohol concentration on permeability of membranes	Nucleotide and DNA Structure DNA Replication Transcription Translation
	Term 3		Term 4	
Spring	**Teacher A – Mass Transport animals**	**Teacher B – Genetics**	**Teacher A Mass transport plants**	**Teacher B - Evolution**
	Haemoglobin and Oxygen Transport Circulatory System Structure Tissue Fluid The Cardiac Cycle Cardiovascular Disease	Mutations Meiosis Crossing over and Other Lifecycles	The Properties of Water Gas Exchange in Plants Water transport in plants Investigating Transpiration Practical Adaptations in xerophytes Mass Flow Hypothesis Evidence for Mass Flow Experiments Required practical: Heart dissection	Evolution by Natural Selection Types of Natural Selection Adaptations Investigating Natural Selection *Required practical: Growth of bacteria*
	Term 5		Term 6	

Summer	**Teacher A - - Digestion & Gas exchange**	**Teacher B – Diversity and Classification**	**Teacher A**	**Teacher B**
	Size and Surface Area Digestion and Absorption of Carbohydrates Digestion and Absorption of Proteins Digestion and Absorption of Lipids Gas Exchange in Humans Effects of Lung Disease in Humans Gas Exchange in Fish and Insects Required practical: Fish gill dissection	Classification Phylogenetics Biodiversity Investigating Biodiversity Statistical Analysis of Data Using Tests	Revision	Revision

Year 13 Biology

	Term 1		Term 2	
Autumn	**Teacher A - Photosynthesis**	**Teacher B**	**Teacher A - Respiration**	**Teacher B**
	Chloroplast Ultrastructure Photosynthetic Pigments and Chromatography Light Dependent Reactions: Photolysis and Photophosphorylation Light Dependent Reactions: The Electron Transport Chain Light Independent Reactions: Calvin Cycle Factors that affect Photosynthesis	Monohybrid Inheritance and codominance Dihybrid Inheritance and Multiple Alleles Linkage Epistasis Chi-squared Test Population genetics Natural Selection Genetic Drift and Speciation	Mitochondrial Structure Glycolysis Link Reaction Krebs cycle Oxidative Phosphorylation/ETC RQ and Respiratory Substrates Measuring Energy in Ecosystems Energy Transfer in Ecosystems and Agriculture Nitrogen Cycle Phosphorous Cycle	Ecosystems and niches Carrying capacity Sampling Succession Conservation *Required practical: Quadrat investigation*

	Required practical: Chromatography, dehydrogenase activity		Fertilisers and Eutrophication Required Practical: Respiration	
	Term 3		Term 4	
Spring	**Teacher A – Stimuli & Responses**	**Teacher B**	**Teacher A – Nervous coordination & Homeostasis**	**Teacher B**
	Taxes and Kinesis Investigating Animal Responses Plant Responses Investigating Plant Responses Required Practical: Maggot	Mutations Stem Cells Control of Gene Expression	Pressure Receptors Visual Receptor Control of Heart Rate Nerve Structure The Synapse Muscle Structure Neuromuscular Junction Muscle Contraction	Genome Projects and Sequencing Making DNA fragments In vivo cloning In vitro cloning Gene Probes Gene Therapy
	Term 5		Term 6	
Summer	**Teacher A - Homeostasis**			
	Homeostasis Glucose Diabetes Kidneys Blood water potential Required Practical: Serial dilution of glucose and Urine Revision			Revision

Year 12 Chemistry

			Term 2	
Autumn	**ROH**	**ROH**		**SMO**
	2.1.1 Atomic structure and isotopes. Electronic Structure 2.14 Acids - PAG 2.1 2.1.5 Redox	2.1.2 Compounds, formulae and equations 2.1.3 Amount of substance – PAG 1.3	3.1.1 Periodicity 3.1.2 Group 2 3.1.3 The halogens – PAG 4.1	2.2.2 Bonding and structure 3.1.4 Qualitative analysis – PAG 4.2
			Term 4	
Spring	**ROH**	**SMO**	**ROH**	**SMO**
	Revision and practice - Mock 3.2.1 Enthalpy changes – PAG 3.1	Revision and practice - Mock 4.1.1 Basic concepts of organic chemistry	3.2.2 Reaction rates – PAG 9.3	4.1.2 Alkanes 4.1.3 Alkenes
			Term 6	
Summer	**ROH**	**SMO**	**ROH**	**SMO**
	3.2.3 Chemical equilibrium	4.2.1 Alcohols 4.2.2 Haloalkanes 4.2.3 Organic synthesis – PAG 5.2 4.2.4 Analytical techniques	Revision and practice Move onto year 13 content	4.2.3 Organic Synthesis continued. 4.2.4 Analytical techniques continued. Revison and practice

Year 13 Chemistry

	Term 1		Term 2	
Autumn	**ROH**	**SMO**	**ROH**	**SMO**
	5.1.1 How fast? PAG 9.1 PAG 10.2	6.1.1 Aromatic compounds 6.1.2 Carbonyl compounds	5.1.2 How far? 5.1.3 Acids, bases and buffers – PAG 11.2	6.1.2 Carbonyl compounds (cont^{d}) 6.1.3 Carboxylic acids and esters 6.2.1 Amines
	Term 3		Term 4	
Spring	**ROH**	**SMO**	**ROH**	**SMO**
	5.1.3 Acids, bases and buffers (cont^{d}) 5.2.1 Lattice enthalpy – PAG 3.2 optional	6.2.2 Amino acids, amides and chirality 6.2.3 Polyesters and polyamides	5.2.2 Enthalpy and entropy 5.2.3 Redox and electrode potentials	6.2.4 Carbon–carbon bond formation 6.2.5 Organic synthesis – PAG 6.2
	Term 5		Term 6	
Summer	**ROH**	**SMO**	**ROH**	**SMO**
	5.3.1 Transition elements 5.3.2 Qualitative analysis – PAG 4.3 revision (optional)	6.3.1 Chromatography and qualitative analysis – PAG 7.2 6.3.2 Spectroscopy – PAG 12.3	Revision and exam practice for final exams	Revision and exam practice for final exams

Year 12 Physics

	Term 1		Term 2	
Autumn	**Teacher A Particles and radiation**	**Teacher B**	**Teacher Electromagnetic radiation & quantum physics**	**Teacher B**
	Atomic structure Stable and unstable nuclei Antiparticles and photons Hadrons and leptons Strange particles and conservation of properties	Measurements and their Errors Use of SI units and prefixes Limitation of physical measurements Estimation of physical quantities Practical: Use of micrometer, ammeter, and voltmeter	Quarks and anti quarks Particle interactions The photoelectric effect Energy level in atoms Wave-particle duality	Waves Progressive and stationary waves Refraction, diffraction, and interference Practical: Young's slit experiment and diffraction grating
	Term 3		**Term 4**	
Spring	**Teacher A Mechanics**	**Teacher b**	**Teacher A Mechanics**	**Teacher B**
	Resolving vectors	Electricity Current electricity Practical: Determination of resistivity of a wire	Projectile motion Drag, lift and terminal speed Conservation of momentum Force, Momentum and impulse Work and power Conservation of energy	Astrophysics Telescopes
	Term 5		**Term 6**	
Summer	**Teacher A Materials**	**Teacher B**	**Teacher A Further mechanics**	**Teacher B**
	Density Hooke's law Stress and strain The Youngs Modulus Stress-strain and force extension graphs Brittle materials	Astrophysics Classification of stars	Circular motion Centripetal force and acceleration Simple harmonic motion Calculations with SHM The mass-spring system (SHO) The simple pendulum and other SHO Free and forced Vibrations	Astrophysics Cosmology

Year 13 Physics

	Term 1		Term 2	
Autumn	**Teacher A Nuclear physics**	**Teacher B**	**Teacher A Nuclear physics**	**Teac her B**
	Rutherford scattering Measuring nuclear radius Properties of nuclear radiation Background radiation and intensity Exponential law of decay Half-life and applications Nuclear decay	Thermal Physics Practical: Investigation of Boyle's law and Charles's law	Mass defect and binding energy Nuclear fission and fusion Nuclear fission reactors	Thermal Physics Practical: Investigation of Boyle's law and Charles's law
	Term 3		**Term 4**	
Spring	**Teacher A Fields**	**Teacher B**	**Teacher A**	**Teacher B**
	Gravitational fields Gravitational field strength Gravitational potential Orbits	Magnetic Fields Magnetic flux density Practical: Investigation using a top pan balance Faraday's Law	Electrical fields Electrical potential Comparing electrical and gravitational fields	Revision
	Term 5		**Term 6**	
Summer	**Teacher A**	**Teacher B**	**Teacher A**	**Teacher B**
	Required practical's and practical endorsement Revision	Revision	Revision	Revision