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Cycle/Cohort	`Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1 Topics and Opportunities	**C1: Particle Model of Matter (4 Weeks)** • States of Matter • Melting/Boiling Points • Solubility • Mixtures	**P5: Waves (5 Weeks)** • Properties of Waves • Light • Sound • Ultrasound	• **B1: Living Systems (6 Weeks)** • Cells and their Structures • Microscopy • Tissues and Organs • Skeletons and Muscles	**Cell Biology** **Combined Science: 14 Lessons** **Separate Science: 17 Lessons** **Cell Structure** **Microscopy** **Microbiology (Separate Science)** **Stem Cells** **Cell Division** **Cell Transport** **Atomic Structure and Periodic Table** **Combined Science: 15 Lessons** **Separate Science: 17 Lessons** **Structure of the Atom** **Development of the Periodic Table** **Chemical Equations** **Separating Mixtures** **Transition Metals (Separate Science)** **Particle Model of Matter** **Combined Science: 7 Lessons** **Separate Science: 9 Lessons** **States of Matter** **Density** **Specific Heat Capacity** **Specific Latent Heat** **Gas Pressure** **Gas Laws (Separate Science)**	**Infection and Response** **Combined Science: 10 Lessons** **Separate Science: 15 Lessons** **Pathogens** **Barriers to Infection** **Viral Diseases** **Bacterial Diseases** **Fungal Diseases** **Immune System** **Vaccines** **Antibiotics** **Drug Testing** **Monoclonal Antibodies (Separate Science** **Bioenergetics** **Combined Science: 9 Lessons** **Separate Science: 9 Lessons** **Photosynthesis** **Limiting Factors** **Aerobic/Anaerobic Respiration** **Metabolism** **Chemical Changes** **Combined Science: 12 Lessons** **Separate Science: 16 Lessons** **Reactivity Series** **Extraction of Metals** **Oxidation and Reduction** **Acids and Bases** **Making Salts** **Electrolysis** **Separate Science:**

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					Titrations **Strong/Weak Acids** **<u>Electricity</u>** **Combined Science: 7 Lessons** **Separate Science: 9 Lessons** **Circuits and Symbols** **Current and Charge** **Ohm's Law** **Non-Ohmic Conductors** **Series and Parallel Circuits** **Mains Electricity** **National Grid** **Separate Science:** **Static Electricity** **Electric Fields**
			Girls in STEM Day workshops (September) **World Space Week (4/10)** **Birmingham University- preparation for Triple Science (Space Physics unit)**		
Autumn 2 Topics and Opportunities	**<u>C4: Acids and Alkalis (4 Weeks)</u>** • Hazard Symbols • Acids and Alkalis • Neutralisation Acids and Metals	**<u>C2: Atoms and Periodic Table (6 Weeks)</u>** • Elements and Compounds • Structure of the Atom • Periodic Table • Chemical and Physical Changes • Conservation of Mass	**<u>B3: Genetics and Evolution (6 Weeks)</u>** • Species and Hybrids • Heredity • Adaptation • Natural Selection • Gene Banks	**<u>Organisation</u>** **Combined Science: 14 Lessons** **Separate Science: 14 Lessons** **Levels of Organisation** **Human Organs** **Digestive System** **Circulatory System** **Health/Non-Communicable Diseases** **Plant Organs** **<u>Structure and Bonding</u>** **Combined Science: 11 Lessons**	**<u>Inheritance, Variation and Evolution</u>** **Combined Science: 12 Lessons** **Separate Science: 16 Lessons** **Reproduction** **DNA and Genetics** **Variation** **Evolution** **Genetic Engineering** **Classification** **Separate Science:**

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				Separate Science: 13 Lessons **Ionic Bonding** **Covalent Bonding** **Polymers** **Giant Covalent Structures** **Metallic Bonding** **Nanoscience (Separate Science)** **States of Matter** **<u>Atomic Structure and Isotopes</u>** **Combined Science: 7 Lessons** **Separate Science: 10 Lessons** **Structure of the Atom** **Ionising Radiation** **Radioactive Decay** **Half-Life** **Radiation Safety** **Separate Science:** **Background Radiation** **Fission v Fusion**	**Mutations** **Protein Synthesis** **Speciation** **<u>Chemical Analysis</u>** **Combined Science: 4 Lessons** **Separate Science: 6 Lessons** **Pure/Impure Substances** **Formulations** **Gas Tests** **Separate Science:** **Analytical Techniques** **Spectrometry** **<u>Forces</u>** **Combined Science: 8 Lessons** **Separate Science: 10 Lessons** **Contact and Non-Contact Forces** **Vectors** **Forces and Energy** **Speed and Acceleration** **Forces and Motion** **Momentum** **Separate Science:** **Impulse**
	Birmingham University Christmas Lectures (Chemistry)	**Birmingham University Christmas Lectures (Chemistry/Physics)**		**Birmingham University Particle Physics Workshop in School**	**Birmingham University GCSE Masterclasses**
	<u>B1: Living Systems (6 Weeks)</u> • Cells and their Structures	**<u>P4: Energy (6 Weeks)</u>** • Energy Types and Transfers	**<u>P1: Forces (7 Weeks)</u>** • Contact and Non-Contact Forces	**<u>Infection and Response</u>** **Combined Science: 10 Lessons** **Separate Science: 15 Lessons**	**<u>Homeostasis and Response</u>** **Combined Science: 9 Lessons** **Separate Science: 12 Lessons**

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Spring 1 Topics and Opportunities	• Microscopy • Tissues and Organs • Skeletons and Muscles	• Efficiency • Energy in Food • Heat Transfer • Energy Resources	• Resultant Forces • Speed and Distance • Motion Graphs • Elasticity	**Pathogens** **Barriers to Infection** **Viral Diseases** **Bacterial Diseases** **Fungal Diseases** **Immune System** **Vaccines** **Antibiotics** **Drug Testing** **Monoclonal Antibodies (Separate Science** **<u>Energy Changes</u>** **Combined Science: 5 Lessons** **Separate Science: 7 Lessons** **Exo/Endothermic Reactions** **Reaction Profiles** **Bond Energies (Higher Tier)** **Separate Science:** **Fuel Cells** **<u>Energy</u>** **Combined Science: 9 Lessons** **Separate Science: 10 Lessons** **Energy Transfers** **Gravitational Potential Energy** **Kinetic Energy** **Elastic Potential Energy** **Thermal Energy** **Insulation (Separate Science)** **Energy Resources**	**N.B. Will take Separate Science Science almost all Summer Term to finish** **Homeostasis** **Nervous System/Reflex Arc** **Hormones** **Reproductive Hormones** **Fertility** **Adrenaline and Thyroxine** **Separate Science:** **The Brain** **The Eyes** **Kidneys** **Plant Hormones** **<u>Rate and Extent of Chemical Change</u>** **Combined Science: 6 Lessons** **Separate Science: 8 Lessons** **Rates of Reaction** **Collision Theory** **Equilbrium and Reversible Reactions** **Le Chatelier's Principle** **Separate Science:** **The Haber Process** **Concentrations in terms of Moles** **<u>Chemistry of the Atmosphere</u>** **Combined Science: 5 Lessons** **Separate Science: 5 Lessons** **Evolution of the Atmosphere** **Greenhouse Gases** **The Carbon Footprint** **<u>Electricity and Magnetism</u>**

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					Combined Science: 4 Lessons **Separate Science: 6 Lessons** **Permanent and Induced Magnets** **Electromagnets and Induction** **The Motor Effect** **Separate Science:** **The Generator Effect** **Transformers** **<u>Waves</u>** **Combined Science: 6 Lessons** **Separate Science: 9 Lessons** **Transverse and Longitudinal Waves** **The Ripple Tank** **Reflection and Refraction** **Electromagnetic Spectrum** **Infra-Red Radiation** **Separate Science:** **Refraction** **Sound** **Seismic Waves**
		Visit to Think Tank- Focus: Energy Resources		**Insight into the Healthcare Professions Workshop - Birmingham University** **British Physics Olympiad- Oxford University** **Big Biology Quiz- Birmingham University**	
Spring 2 Topics and Opportunities	**<u>P1: Forces (7 Weeks)</u>** • Contact and Non-Contact Forces • Resultant Forces • Speed and Distance	**<u>B4: Photosynthesis and Respiration (6 Weeks)</u>** • Photosynthesis • Limiting Factors	**<u>B4: Photosynthesis and Respiration (6 Weeks)</u>** • Photosynthesis • Limiting Factors	**<u>Bioenergetics</u>** **Combined Science: 9 Lessons** **Separate Science: 9 Lessons** **Photosynthesis** **Limiting Factors**	**Revision For**

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	• Motion Graphs • Elasticity	• Aerobic/Anaerobic Respiration • Blood and Circulation	• Aerobic/Anaerobic Respiration • Blood and Circulation	**Aerobic/Anaerobic Respiration** **Metabolism** **<u>Chemical Changes</u>** **Combined Science: 12 Lessons** **Separate Science: 16 Lessons** **Reactivity Series** **Extraction of Metals** **Oxidation and Reduction** **Acids and Bases** **Making Salts** **Electrolysis** **Separate Science:** **Titrations** **Strong/Weak Acids** **<u>Electricity</u>** **Combined Science: 11 Lessons** **Separate Science: 13 Lessons** **Circuits and Symbols** **Current and Charge** **Ohm's Law** **Non-Ohmic Conductors** **Series and Parallel Circuits** **Mains Electricity** **National Grid** **Separate Science:** **Static Electricity** **Electric Fields**	**GCSE Exams**
	Visit to National Space Centre Leicester (Gravity/Planets)			**Forge Your Future (Girls)- Birmingham University**	
	<u>B5: Reproduction and Growth (5 Weeks)</u>	**<u>C6: Earth and Atmosphere (5 Weeks)</u>**	**<u>C3: Reactions (6 Weeks)</u>** • Atoms and Elements	**<u>Homeostasis and Response</u>** **Combined Science: 14 Lessons**	**GCSE**

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Summer 1 Topics and Opportunities	• Human Reproduction • Plant Reproduction • Puberty • Menstruation	• Structure of the Earth • Rocks • The Atmosphere • Global Warming/Climate Change	• Reactivity Series • Reversible Reactions • Oxidation and Reduction	**Separate Science: 22 Lessons** **N.B. Will take Separate Science Science almost all Summer Term to finish** **Homeostasis** **Nervous System/Reflex Arc** **Hormones** **Reproductive Hormones** **Fertility** **Adrenaline and Thyroxine** **Separate Science:** **The Brain** **The Eyes** **Kidneys** **Plant Hormones** **<u>Quantitative Chemistry</u>** **Combined Science: 6 Lessons** **Separate Science: 10 Lessons** **Balancing Equations** **The Mole** **Reacting Masses** **Empirical Formulae** **Limiting Reagents** **Concentration** **Separate Science:** **Percentage Yield** **Atom Economy** **Concentration of Gases** **Titration Calculations**	**Examination Season**

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Summer 2 Topics and Opportunities	**P3: Electricity and Magnetism (6 Weeks)** • Static Electricity • Circuits • Resistance • Magnetic Fields • Electromagnets	**B6: Ecosystems (4 Weeks)** • Communities • Feeding Relationships • Human Impact on Environment	**P3: Electricity and Magnetism (6 Weeks)** • Static Electricity • Circuits • Resistance • Magnetic Fields • Electromagnets	**Combined Science Classes: Ecology (10 Lessons)** **Biotic and Abiotic Factors** **Quadrats and Sampling** **Adaptations** **Human Impact on the Environment** **Climate Change** **Organic Chemistry** **Combined Science: 8 Lessons** **Separate Science: 14 Lessons** **Crude Oil** **Hydrocarbons** **Fractional Distillation** **Combustion** **Cracking** **Separate Science:** **Alkenes** **Alcohols** **Carboxylic Acids** **Space Physics** **Separate Science: 5 Lessons** **Life-Cycle of a Star** **Gravitationl Fields** **Origins of the Universe** **Waves** **Combined Science: 6 Lessons** **Transverse and Longitudinal Waves** **The Ripple Tank** **Reflection and Refraction** **Electromagnetic Spectrum**	

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				Infra-Red Radiation	
		Visit to West Midlands Safari Park		**Separate Science: Visit to Birmingham University Astrophysics Department** **Combined Science: Discovery Day June 2023 (Birmingham University)**	**Insight into University- Birmingham University**