

The Bishop of Winchester Academy Curriculum Plan – Science

The **Science** curriculum at The Bishop of Winchester Academy has been designed with the key aim of enabling students to live life to the full. Through the acquisition of knowledge and the practised application of skill, students can have the courage to be wise and make intelligent, informed decisions.

Our knowledge-based curriculum is ambitious in its breadth and depth, offering challenge to learners irrespective of their background. Through setting high expectations and accepting no excuses for all, we counter social disadvantage and bolster aspirations. Students are nurtured and supported throughout their journey at The Bishop, and explore ways to develop their awareness, collaboration, creativity, empathy, independence and resilience, collectively referred to as our LApps (Learning Applications).

Year 7	Michaelmas (M1)	Michaelmas (M2)	Lent (L1)	Lent (L2)	Pentecost (P1)	Pentecost (P2)
Disciplinary Knowledge	Enquiry Processes Planning investigations Recording data Analysing & Evaluating Biology 1 (Part 1) Cells Levels of organisation Joints and Muscles	Biology 1 (Part 2) Ecosystems Variation and Adaptation Animal Reproduction Plant Reproduction	Chemistry 1 (Part 1) Atoms, elements, compounds The periodic table Chemical Formulae Polymers	Chemistry 1 (Part 2) Metal extraction Recycling The carbon cycle Global warming Climate change	Physics 1 (Part 1) Forces (introduction) Motion graphs Friction and drag Turning forces Squashing and stretching	Physics 1 (Part 2) Food and Fuels Energy resources Conservation of Energy Energy dissipation
Disciplinary Skills	<ul style="list-style-type: none"> - Assessing risk - Constructing tables and graphs - Analysing and evaluating data - Using a microscope - Calculating magnification 	<ul style="list-style-type: none"> - Collecting data of a sample - Describing scientific phenomena 	<ul style="list-style-type: none"> - Describing trends in the periodic table - Formula literacy 	<ul style="list-style-type: none"> - Using a reactivity series to determine extraction techniques - Writing displacement reaction equations - Arguing viewpoints 	<ul style="list-style-type: none"> - Measuring forces - Drawing graphs - Interpreting graphs 	<ul style="list-style-type: none"> - Conserving energy at home - Investigating energy in foods
Personal Development	BV: Rule of Law	Sexual reproduction & health BV: Mutual Respect TBOWA 200: Sir David Attenborough	LApp: Resilience	LApp: Empathy Christian Character: Courageous Advocacy	TBOWA 200: Sir Isaac Newton	LApp: Awareness Planning home finances (energy bills)
Future pathways	Microbiologist Sport Scientist	Ecologist Conservationist Veterinary Assistant	Chemical Engineer Construction Engineer	Environmental Scientist Government Adviser Engineer	Traffic Enforcement Officer Automotive Engineer Painter and Decorator	Architect Automotive Engineer

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Year 8	Michaelmas (M1)	Michaelmas (M2)	Lent (L1)	Lent (L2)	Pentecost (P1)	Pentecost (P2)
Core Objectives	Biology 2 (Part 1) Evolution & Natural Selection Genetics and inheritance	Biology 2 (Part 2) Smoking, drugs and alcohol Digestion and diet	Integrated Sciences – Energy (Part 1) Bioenergetics Combustion Thermal decomposition	Integrated Sciences – Energy (Part 2) Reaction energy changes Energy transfer & machines Waves and energy	Physics 2 (Part 1) Sound Hearing Light Vision	Physics 2 (Part 2) Earth structure The rock cycle The night sky and space
Disciplinary Skills	- Evaluating evidence - Making predictions - Calculating percentages	- Assessing health risks - Analysing trends in data - Observing qualitative results	- Formula literacy - Writing to compare	- Planning and investigating energy changes in reactions - Evaluating models of waves	- Applying investigative approaches - Making predictions using scientific knowledge and understanding	- Writing to describe - Academic reading - Scientific developments
Character Development	LApp: Awareness TBOWA 200: Charles Darwin	BV: Rule of Law Risk factors affecting health	LApp: Resilience	Insulating homes & financial impact	Avoiding hearing loss LApp: Empathy	Christian Character: Awe and wonder
Future pathways	Gene therapist Conservationist Ecologist	Dietician Health clinician Statistician	Chemical engineer Baker	Medical Physicist Nuclear engineer Telecommunications researcher	Stage/theatre technician Audiologist	Palaeontologist Astronomer Geologist



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Year 9	Michaelmas (M1)	Michaelmas (M2)	Lent (L1)	Lent (L2)	Pentecost (P1)	Pentecost (P2)
Core Objectives	Physics 3 (Part 1) Electric circuits Current Potential Difference Resistance	Physics 3 (Part 2) Magnetism Electromagnets Pressure Stress on solids	Chemistry 2 (Part 1) States and pressure Pure/impure substances Separation techniques	Chemistry 2 (Part 2) Acids & Alkalis Neutralisation Reactions of metals with acids, oxygen and water	Medical Science Cells Digestive system Enzymes Circulatory system Bioenergetics Disease	Pharmaceuticals Development of drugs and vaccines Atomic model Electron arrangement Arranging elements Chemical measurements
Disciplinary Skills	- Calculating variables using equations - Drawing circuits	- Analysing trends in data - Writing to explain	- Explaining phenomena - Planning preparations - Assessing risk	- Assessing risk - Constructing chemical equations	- Unit conversions - Use of microscopes - Constructing chemical equations	- Drawing electron configuration - Calculating chemical quantities
Character Development	BV: Rule of Law Electrical safety at home	Christian Character: Awe and Wonder	LApp: Creativity	LApp: Resilience BV: Rule of Law	BV: Respect LApp: Empathy	LApp: Resilience Alexander Fleming, Edward Jenner
Future pathways	Electrician Computer scientist	Engineer MRI Technician	Organic Chemist Chemical engineer	Food Scientist/Technologist Toxicologist	Doctor Nurse Paramedic Social care	Biochemist Researcher Pharmacist Pharmaceutical sales

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Year 10	Michaelmas (M1)	Michaelmas (M2)	Lent (L1)	Lent (L2)	Pentecost (P1)	Pentecost (P2)
Core Objectives	Engineering Energy Matter Circuit diagrams Domestic Electricity Electrical calculations	Innovation, Design and Technology Chemical bonds Properties of substances Acids/Alkalis/pH Electrolysis Nuclear radiation	Pathology and Forensic Science Hormones and nerves Hormonal control incl. diabetes Reproduction and the menstrual cycle Contraception	Chemical Engineering Rate of reaction Dynamic equilibria Organic chemistry Earth's resources Life cycle assessments	Environmental Science and Evolution Adaptations and competition Biodiversity and ecosystems Human impacts on biodiversity	Environmental Science and Evolution Carbon/water cycle Greenhouse effect Climate change Variation and evolution Genetics
Disciplinary Skills	- Drawing more complex circuits - Electrical calculations	- Drawing electron structure for bonding - Predicting products	- Reading medical information on diabetes - Writing for a specified audience on contraception	- Calculating rates of reaction - Writing life cycle assessments for products	- Sampling techniques and statistical analysis	- Writing for a specified audience on climate change - Reading and understanding different arguments on climate
Character Development	LApp: Creativity Wiring a plug	BV: Respect Christian Character: Kindness Chernobyl, acid attacks	Types of contraception Reproduction Menstrual cycle BV: Individual Liberty	LApp: Resilience Depleting of the Earth's resources	Christian Character: Kindness TBOWA 200: Sir David Attenborough Extinction of species	BV: Respect LApp: Empathy Global climate responsibility
Future pathways	Engineer Electrician Electronics engineer IT consultant	Metal extraction Nuclear engineer Medical Physicist Wastewater treatment	Pathologist Dietician/nutritionist Health worker Midwife	Chemical engineer Product developer Organic chemist Petroleum engineer	Conservationist Ecologist Statistician Countryside Ranger	Energy services Water services Gene therapist Evolutionary geneticist



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Year 11	Michaelmas (M1)	Michaelmas (M2)	Lent (L1)	Lent (L2)	Pentecost (P1)	Pentecost (P2)	
Core Objectives	Travel in Space Forces Forces calculations Newton's Laws Waves	Travel in Space Electromagnetic spectrum properties, uses and risks Magnets Electromagnets Motor effect Space	Retrieval Practice Paper 1 Biology Paper 1 Chemistry	Retrieval Practice Paper 1 Physics Paper 2 Biology	Retrieval Practice and External Exams Paper 2 Chemistry Paper 2 Physics	External Exams	
Disciplinary Skills	- Force calculations - Wave calculations	- Drawing and interpreting magnetic fields and forces - Writing for a specified audience on uses/risks of the EM spectrum	- Use of equations - Calculations - Writing to describe, explain and compare - Analysis of data	- Use of equations - Calculations - Writing to describe, explain and compare - Analysis of data	- Use of equations - Calculations - Writing to describe, explain and compare - Analysis of data		
Character Development	LApp: Resilience TBOWA 200: Sir Isaac Newton Light and vision	Creation of the Universe EM spectrum uses and risks					
Future pathways	Meteorologist Oceanographer Mechanic Automotive Engineer	Telecommunications Space engineers Astronomer Astrophysics					

