Sackville School Science Curriculum - Year 8

TERM	WHAT? (Is delivered?)	WHY? (Is this important?)	WHY NOW? (Why is this taught now?)	IMPACT? (What is the impact at the end of this half term?)	ASSESSMENT
Aut	Topics - B3: Nutrition and Digestion C4: Chemical Reactions P4: Pressure in Fluids	• Pedagogical Rationale: Advances basic Year 7 structures into biochemical and chemical systems. Nutrition explains how organisms break down energy inputs for survival. Chemical reactions govern the fundamental rearrangement of atoms to create new substances. Pressure in fluids introduces the macroscopic, mathematical physics of forces acting within fluids and gases. • It bridges the gap between mechanical models and functional systems	• Sequencing Justification: Positioned at the start of Year 8 to build directly upon foundational Year 7 content. B3 expands the cell biology concept (B1) into complex, multi-organ human systems. C4 transitions pupils from identifying atoms and compounds (C2) into exploring how they break apart and reform. P4 leverages particle model knowledge (C1) and force interactions (P3) to explain physical pressure. • This content capitalises on established routines and baseline mathematical competence, introducing quantitative laws early in the academic year.	• Conceptual Mastery: Pupils understand the structural components of the human digestive system, distinguish between physical changes and chemical reactions, and explain how depth and altitude alter fluid pressure. • Skill Acquisition: Pupils write word equations for chemical reactions, calculate fluid pressure using standard formulas, and model nutrient absorption mechanisms. • Cognitive Shift: Pupils move from viewing substances as fixed entities to recognizing that matter undergoes constant rearrangement during chemical reactions. • Interdisciplinary Links: Pupils directly apply mathematical ratio and equation-rearrangement skills from Year 7 to determine pressure and force	Within each topic: Knowledge check(s) Application check at the end of each topic
Spr	Topics - (from Aut) and B4: Gas Exchange Systems C5: Energy Changes P5: Sound	• Pedagogical Rationale: Introduces biological ventilation alongside chemical thermodynamics and physical wave behaviors. Gas exchange systems unlock the mechanics of oxygen transport. Energy changes classify reactions based on heat transfer. Sound introduces mechanical waves, explaining how energy propagates through matter. • It deepens structural understanding by examining how physical systems transport energy and gases, preparing pupils to process more abstract ideas	• Sequencing Justification: Capitalises and expands upon prior learning. B4 pairs directly with Autumn nutrition (B3), completing the entry pathway of reactants required for cellular survival. C5 introduces energy transfers into the chemical reactions explored in Autumn (C4). P5 applies the Year 7 particle model (C1) to explain how longitudinal sound waves travel through different densities. • This sequence ensures pupils possess a stable grasp of substance structures	• Conceptual Mastery: Pupils map out the human gas exchange pathway, classify reactions as exothermic or endothermic, and describe how sound waves travel, reflect, and change volume or pitch. • Skill Acquisition: Pupils use the wave model to explain sound propagation, and analyze breathing rate data • Cognitive Shift: Pupils recognize that chemical reactions do not just move matter but dynamically absorb or release energy into the surrounding environment. • Data Literacy: Pupils interpret wave waveforms, linking physical attributes like amplitude and frequency directly to volume and pitch.	Within each topic: Knowledge check(s) Application check at the end of each topic

Sum	Topics - (from Spr) and B5: Reproduction P6: Light With some elements of the following topics after the end of Y8 exams B6: Respiration B7: Photosynthesis P7: Electricity	• Pedagogical Rationale: Explores the biological continuation of life as well as the non-mechanical wave behaviors of electromagnetic radiation. Reproduction provides the genetic and physiological foundations of life cycles. Light introduces transverse electromagnetic waves, defining how humans perceive the visible universe through reflection and refraction. • It completes the study of foundational physics wave types and introduces the concepts behind inheritance and species survival.	• Sequencing Justification: Positioned as concepts benefit from prior learning in other topics, which are referred to explicitly within new subject material. B5 builds on Year 7 cell structures (B1) to explore gametes and reproductive anatomy. P6 follows sound waves (P5), allowing immediate comparative analysis between longitudinal waves and transverse waves. • This layout allows pupils to cross-reference and contrast scientific models simultaneously as they approach the end of the core subject cycles.	• Conceptual Mastery: Pupils describe the anatomical structures and processes involved in human reproduction, and explain how light reflects off mirrors and refracts through different medium densities. • Skill Acquisition: Pupils construct accurate ray diagrams for reflection and refraction, and contrast the properties of light and sound waves. • Cognitive Shift: Pupils grasp that light behaves differently to sound, understanding that visual perception relies on wave interactions with materials rather than matter displacement. • Analytical Precision: Pupils identify patterns in biological changes over time	Within each topic: Knowledge check(s) Application check at the end of each topic Academic Year closes with an End of Year Assessment covering Y8 content.

Links to Gatsby Benchmarks:

Gatsby Benchmark: Within each topic, a career information sheet is provided along with interpretation questions. This contextualises every topic covered with a suitable career that uses the concepts covered in that topic directly or indirectly. This increases student awareness of the potential careers available to them, but also provides information on what the career entails. Students are encouraged to ask further questions or explore more independently if they are interested and directed towards Unifrog/other online resources to find out more about entry criteria for these roles.

Biology careers
Dietician, respiratory healthcare specialist, reproductive endocrinologist, Botanist, Brewer

Chemistry careers
Environmental chemist, thermodynamic engineer

Physics careers
Meteorologist, Sound engineer, Architectural glass designer, electrical engineer

Links to L4L:

Families 2

B3 (Nutrition & Digestion): Factual basis of metabolic demands required to successfully fuel and sustain healthy human development.

Families 6

B5 (Reproduction): The complete biological path of human birth, gestation, and lifecycle inheritance mechanisms.

Families 7

B5 (Reproduction): Biological mechanics of human gestation, placenta transfers, and structural embryo vulnerabilities.

Respectful Relationships 3

B3 (Nutrition & Digestion): Provides a medical, non-biased framework for nutrient needs to deter body image distortions or eating disorders

Mental Wellbeing 2

B4 (Gas Exchange Systems): Explores how routine exercise improves lung capacity, ventilation rates, and cardiac/respiratory efficiency.

Physical Health and Fitness 1

B4 (Gas Exchange) & B6 (Respiration): How routine cardiovascular fitness enhances anaerobic/aerobic thresholds and stamina.

Physical Health and Fitness 3

B3 (Nutrition) & B4 (Gas Exchange): Biological impacts of obesity on vital organs, cellular gas transport, and cardiovascular strain.

Healthy Eating 1

B3 (Nutrition & Digestion): Direct delivery of the 7 main nutrient groups and the composition of a healthy, macro-balanced food intake.

Healthy Eating 3

B3 (Nutrition & Digestion): Calculating dietary energy requirements and evaluating energy inputs against expenditure. Clear biological symptoms of malnourishment, severe nutrient deficiencies (scurvy, rickets), and obesity.

Drugs, Alcohol, Tobacco and Vaping 4

B5 (Reproduction): Explores how alcohol molecules cross the placenta to induce Foetal Alcohol Syndrome (FAS) during gestation.

Drugs, Alcohol, Tobacco and Vaping 6

B4 (Gas Exchange Systems): Explores structural lung damage, tar accumulation, alveoli paralysis, and carcinogenic impacts on airways.

Health protection and prevention, understanding the health care system 4

B5 (Reproduction): Early introduction to normal anatomical structures to enable future medical recognition of physical anomalies.

Developing Bodies 1

B5 (Reproduction): Explicit biological changes, including hormonal control mechanisms, secondary sexual traits, and ovulation.

Developing Bodies 2

B5 (Reproduction): Absolute scientific delivery of the typical 28-day ovarian/uterine cycle, tissue shedding, and fertility windows.