Science Curriculum Plan 2024/2025

Year 7

Biology units are grouped into these key areas of study:

BBL (Building blocks of life)
THB (The human body)
IOL (Interaction of life)

Chemistry units are grouped into these key areas of study:

BOM (Behaviour of matter)
CR (Chemical reactions)
OE (Our Earth)

Physics units are grouped into these key areas of study:

BOE (Behaviour of energy)
OEOO (Objects' effects on other objects)
BE (Beyond Earth)

Term	Unit	Overview of learning intent
Autumn	Behaviour of matter (BOM5): The particle model	• The differences in arrangements, in motion and in closeness of particles explaining changes of state, shape and density, and the anomaly of ice water transition • Atoms and molecules as particles. • The properties of different states of matter (solid, liquid and gas) in terms of particle model, including gas pressure. • The difference between physical and chemical changes.
	Objects' effects on other objects (OEOO4): Changing shape	• Forces measured in Newtons. • Forces as pushes or pulls, arising from the interaction between objects: Contact forces and non- contact forces. • Non-contact forces: gravity forces acting at a distance on earth and in space. • Single forces. Draw for contact and non-contact, including magnetism. • Using force arrows in diagrams to show each force acting upon an object. • Balanced forces and equilibrium; weight held by stretched spring or supported on compressed surfaces. • Measurements of stretching or compression as force is changed.
	Building blocks of life (BBL1): Animal cells	• The function of the cell membrane, cytoplasm, nucleus, and mitochondria. • The hierarchical organisation of multicellular organisms: from cells to tissue to organs to systems to organisms. • Cells as the fundamental unit of living organisms, including how to observe, interpret and record cell structure using a light microscope. • The structure and function of the human skeleton, to include support, protection, movement and making blood cells. • Biomechanics - the interaction between skeleton and muscles, including the measurement of force exerted by different muscle groups. • The function of muscles and examples of antagonistic muscles.

Spring	Behaviour of matter (BOM6): The atom	• A simple (Dalton) atomic model. • Difference between atoms, elements and compounds. • Chemical symbols and formulae for elements and compounds. • Conservation of mass, changes of state and chemical reactions.
	Beyond Earth (BE3): Astrophysics	• Our Sun as a star, other stars in the galaxy and other galaxies. • Gravity force, weight = mass x gravitational fields strength (g). On Earth g=10 N/kg, but it's different on other planets and stars. • Gravity forces between Earth and Moon, and between Earth and Sun (qualitative only).
	Behaviour of matter (BOM7): The atom	• Conservation of materials and mass, reversibility in melting, freezing, evaporation, sublimation, condensation and dissolving. • Similarities and differences, including density differences, between solids, liquids and gases. • Brownian motion of gases. • Diffusion in terms of particle model. Diffusion in liquids and gases by differences in concentration.
	The human body (THB7): The breathing system	• The structure and functions of the gas exchange systems in humans, including adaptations to function. • The role of diffusion in the movement of materials. • The mechanism of breathing to move air in and out of the lungs, using a pressure model to explain the movement of gases. • Using a pressure model to explain the movement of gases, including simple measurements of lung volume.
	Chemical reactions (CR3): Types of reaction	• Chemical reactions as the rearrangement of atoms. Representing chemical reactions using formulae and using equations. • Representing chemical reactions using formulae and using equations. Combustion, thermal decomposition, oxidation and displacement reactions.
	Our Earth (OE3): The cycles	• The composition of the Earth. • The structure of the Earth. • The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. • The water cycle • Water poverty and how it's being addressed.
Summer	Building blocks of life (BBl2): Human reproduction	• Reproduction in humans (as an example of a mammal) including the structure and function of the male and female reproductive systems and gametes. • The menstrual cycle (without details of hormones) • Fertilisation, gestation, and birth, to include the role of the placenta.
	The human body (THB8): Healthy living	• The structural adaptations of some unicellular organisms • The effects of recreational drugs (including substance misuse) on behaviour, health and life processes • The impact of exercise, asthma and smoking on the human gas exchange system • The effect of maternal lifestyle on the foetus through placenta.
	Behaviour of matter (BOM8): Purity	• The concept of a pure substance • Mixtures, including dissolving. • Simple techniques for separating mixtures; filtration, evaporation, and distillation. • The identification of pure substances
	Beyond Earth (BE4): The space race	• The light-year as an astronomical value • Gravity force = weight x gravitational field strength, different on other planets and stars • The objects that can be observed in the night sky; objects that can be observed by telescopes.