

## Year 7 Science at Seva School

Year 7 Science		
Term 1	Term 2	Term 3
Introduction to Science Reactions (7F) Forces (7K) Organisms (7A/7C)	Variation and Classification The Particle Model (7G) Reproduction (7B/8B) Energy (7I)	Ecosystems (7D) Electromagnets/Electricity (7J) Sound and Light (7L/8J) Acids and Alkalis (7E)

Further detail on the content covered in each topic is provided below:

- Introduction to Science:** A bridging topic created to “train” Year 7 students as scientists; it provides them the opportunity to learn the basic practical skills and associated safety issues necessary in science.
- Reactions:** This topic focuses on students learning strategies to identify chemical reactions, and to provide an opportunity to be introduced to some key examples of chemical reactions and fundamental scientific techniques/tests.
- Forces:** Covering the concept of push and pulls, to include force diagrams and balanced and unbalanced forces, it also introduces distance time graphs, and pressure calculations.
- Organisms:** An introduction into the world of cells, including discovering the differences between animal and plants cells, how cells are specialised and how to use a microscope to observe cells.
- Variation and classification:** This topic looks at the differences between species; how genetic information is transmitted from one generation to the next and the role of adaptation in evolution.
- The particle model:** This topic is designed to build on the KS2 model of a solid, liquid and a gas in terms of developing the use of the particle model to example structure and changes of state.
- Reproduction:** This topic covers reproduction in mammals.
- Energy:** This topic covers energy resources, transfers and fuels.
- Ecosystems:** Covering the interdependence of organisms within ecosystems such as food chains, webs and pyramids.
- Electromagnets/Electricity:** Introduces students to simple circuits and electrical components, and allows them to investigate the link between electricity and magnetism.
- Sound and Light:** Students investigate the properties associated with light waves and sound waves. They are also introduced to the anatomy of an eye and compare this with the design of a camera.
- Acids and Alkalis:** Introducing acids and alkalis, the pH scale, acids and alkalis around us and neutralisation reactions.

## Year 8 Science at Seva School

Year 8 Science		
Term 1	Term 2	Term 3
Food and Nutrition (8A) Combustion (8E) Fluids (8I) Biodiversity and Reproduction in Plants (8B)	The Periodic Table (8F) Energy transfer (8K) Breathing and Respiration (8C) Metals (8G)	The Planets (8L) Microbes (8D) Rocks (8H) Motion (9I)

Further detail on the content covered in each topic is provided below:

- Food and Nutrition:** Examines what constitutes a balanced diet and the role of the various nutrients within the body. The anatomy of the digestive system is also studied.
- Combustion:** Covers the burning of fuels and the advantages and disadvantages of different fuels, including problems of air pollution. We also study the reactions of metals with oxygen.
- Fluids:** Covers the states of matter, changes of state, pressure in fluids and density measurements related to floating and sinking.
- Biodiversity & Reproduction in Plants:** Focuses on classification, different types of reproduction, pollination and fertilisation in plants.
- The Periodic Table:** Studies atomic structure, reactivity of elements, introduction to chemical formulae and predicting trends within the periodic table.
- Energy Transfer:** Looks at how energy is transferred and how we can control energy transfer to increase efficiency, including power calculations.
- Breathing and Respiration:** Covers gas exchange in different organisms, aerobic respiration and anaerobic respiration.
- Metals:** Covers metals and their properties including the reactivity series and pure metals and alloys.
- The Planets:** Studies the solar system, seasonal changes on Earth, the Earth's magnetic field and gravity.
- Microbes:** Covering Fungi, Bacteria and Protoctists and their importance for all organisms.
- Rocks:** Types of rock, weathering and erosion and extraction of useful materials.
- Motion:** Covering Speed, distance-time graphs, turning forces and levers.

## Year 9 Science at Seva School

At GCSE level our students will follow the Edexcel (9-1) course. Depending on their options they will either follow the separate sciences route and work towards three GCSEs in Biology, Chemistry and Physics. Or they will follow the combined sciences course and achieve two GCSEs in Combined Science (double award). The GCSE exams will take place at the end of Year 11 and there is no coursework or controlled assessment. Students do however, have to successfully complete a series of core practicals.

<b>YEAR 9 SEPARATE SCIENCES</b>			
	<b>Term 1</b>	<b>Term 2</b>	<b>Term 3</b>
Biology	Key Concepts in Biology	Cells and Control	Genetics
<b>Chemistry</b>	Key Concepts in Chemistry	Bonding, Matter	Acids and alkalis, mass calculations
<b>Physics</b>	Key Concepts of Physics, Motions and Forces	Energy	Waves
<b>Year 9 COMBINED SCIENCES</b>			
	Foundations in Biology Key Concepts in Chemistry	Cells and Control Bonding Key Concepts of Physics	Matter Motions and Forces Conservation of Energy

<b>Key Concepts in Biology:</b>	Cells and Microscopy, Enzymes, Food tests and Energy content, Transport in/out of cells
<b>Cells and Control:</b>	Cell division and differentiation, The nervous system, The brain, The eye
<b>Natural Selection &amp; Genetic Modification:</b>	Reproduction, DNA, Protein synthesis, Genetic inheritance
<b>Key Concepts in Chemistry:</b>	States of matter, separating substances, atomic structure, the periodic table
<b>Bonding, Types of substance:</b>	Ionic and covalent bonding, substance types
<b>Acids &amp; alkalis, calculations involving masses:</b>	Acids, bases, salts and neutralisation, masses and empirical formulae, moles
<b>Key Concepts in Physics:</b>	Use of scientific units
<b>Motions and Forces:</b>	Vectors, speed, distance-time graphs, acceleration, Newton's laws, mass, weight and momentum
<b>Energy:</b>	Conservation of energy, energy stores and transfers, energy efficiency, renewable and non-renewable resources
<b>Waves:</b>	Frequency and wavelength equations, reflection, refraction, transmission and absorption