CNCS

Year 7 Science: Curriculum Overview

Rationale: In Year 7, students will build on prior knowledge from KS2 and develop their skills in key foundation concepts in Biology, Chemistry and Physics. Students will learn how to work safely in a lab and investigate scientific questions. Students will revisit and be introduced to a range of specific subject terminology, learning how to identify and discuss this appropriately. Furthermore, students will be given opportunities to develop their own responses to scientific problems and consider how to apply their knowledge to them.

A learner in Year 7 will know/ have studied:	**A learner in Year 7 will be able to:**
Key areas in all three sciences, this will build the foundation for further study and investigation. They will have worked in a lab and will know the key safety rules to follow. They will have carried out key investigations to help with their understanding of the areas taught.	Work safely in labs and carry out investigations. They will be able to question and will have begun to understand the world around them from the units studied.

Term	Outline	Assessment	Home Learning	Key Skills/ End Point
1	**B1 Cell Biology** Students will be able to describe and compare plant, animal and bacterial cells. They will be able to use a microscope to view a slide they have prepared. They will be able to simply describe diffusion, state the factors that affect it and name places where it occurs in living things. **C1.1 Particles** Students will be able to describe the 3 states of matter, the properties of them. They will be able to describe the process of diffusion using investigations. They will be able to recognise variables. They will be able to describe gas pressure and calculate density. **P1 Contact forces** Students will be able to describe forces (balanced and unbalanced forces. They will look at resultant forces and investigate friction and drag forces. Students will be able to look at springs and discuss deformity.	**Pitstops: (Section 1 – Key knowledge, Section2 – Extended knowledge & Section 3- 4 to 6 marks) completed after every topic.** B1.1 Cells Pitstop C1.1 Particles Pitstop P1.1 Forces pitstop **1.2 End of Term assessment (B1.1,C1.1 and P1.1)** **Skills Tested** AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.	Set once per week via Educake.	Students are able to recall key knowledge and apply this knowledge to exam questions from different areas. Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts. Students are able to analyse information given to them, and apply their knowledge gained through the course to evaluate data provided.

2	**B1.2 Reproduction** Students will be able to describe the differences between sexual and asexual reproduction. They should be able to go through the stages of menstrual cycle, puberty and the reproductive system. Students will be able to recognise the stages of embryo development. They will be able to describe about the plant reproduction. **C1.2 Atoms, elements and compounds** Students will be able to recognise the difference between atoms, elements and compounds. They will be introduced to the periodic table and it's properties. They will carry on to metals and non-metals – its' properties. They will be able to name compounds using the rules. **P1.2 Space** Students will learn about gravity, mass, and weight, understanding how these forces keep objects in orbit. They will explore the solar system, the role of satellites, and how seasons and eclipses occur. This topic will help students understand key space concepts and how they affect life on Earth.	**Pitstops** B1.2 Reproduction C1.2 Atoms, elements and compounds P1.2 Space **2.2 End of Term Assessment** B1.2 Reproduction C1.2 Atoms, elements and compounds P1.2 Space **Skills Tested** AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures. AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.	Set once per week via Educake.	Students are able to recall key knowledge and apply this knowledge to exam questions from different areas. Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts. Students are able to analyse information given to them, and apply their knowledge gained through the course to evaluate data provided.
3	**B1.3 Interdependence** Students will explore how organisms interact within ecosystems, including competition for resources and the balance between biotic and abiotic factors. They will learn about food chains, food webs, and trophic levels to understand energy flow. Through sampling techniques, students will investigate how plant and animal populations are distributed and measured in different environments. This topic will develop their understanding of ecosystems and the importance of maintaining biodiversity. **C1.3 Mixtures** Students will learn about mixtures and how they differ from pure substances. They will explore solutions, melting and boiling points, and what makes a substance pure. Through practical investigations, they will develop skills in separating mixtures using techniques such as filtration, crystallisation, fractional distillation, and chromatography. This topic will help students understand the importance of separation methods in	**Pitstops:** B1.3 Interdependence C1.3 Mixtures P1.3 Energy P1.4 Electrical circuits **3.2 End of Term Assessment** B1.3 Interdependence C1.3 Mixtures P1.3 Energy **Skills Tested** AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures. AO2: Apply knowledge and understanding of: scientific ideas; scientific enquiry, techniques and procedures.	Set once per week via Educake	Students are able to recall key knowledge and apply this knowledge to exam questions from different areas. Students will interpret and then describe and explain what graphs show with reference to the data collected for a range of contexts. Students are able to analyse information

	science and real-world applications, such as water purification and food testing. **P1.3 Energy** Students will explore energy stores, transfers, and efficiency, applying these concepts to real-world scenarios. They will investigate wasted energy, heat, temperature, and thermal energy, using the particle model to explain energy transfer. The topic also covers conductors, insulators, and their role in energy conservation. Through practical experiments and problem-solving, students will develop scientific reasoning and mathematical skills. By understanding how energy is conserved and optimised, they will gain insight into sustainability. **P1.4 Electrical circuits** Students will develop an understanding of electrical circuits, exploring models of electricity, circuit components, and how current flows. They will investigate the differences between series and parallel circuits, learning how to measure current and voltage accurately. Through practical experiments and problem-solving, students will analyse the behaviour of circuit components and apply key concepts to real-world electrical systems. This topic will enhance their scientific reasoning and mathematical skills, preparing them to understand and apply electrical principles in everyday life.	AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.		given to them, and apply their knowledge gained through the course to evaluate data provided.