

**Liverpool Girls’ High School**

*Innovation Excellence Learning*

**Science ~** Stage 4 Course Outline

INTRODUCTION TO THE STAGE 4 SCIENCE COURSE

*By the end of Stage 4 students:*

* use scientific inquiry by actively engaging in using and applying the processes of Working Scientifically;
* identify questions and problems that they can test or research scientifically;
* individually and collaboratively plan and safely conduct a range of first-hand investigations;
* process and analyse data and to identify trends, patterns and relationships, drawing relevant, evidence-based conclusions;
* develop their knowledge of and about science ideas and concepts, as well as the nature, development and importance of scientific evidence;
* explain how scientific knowledge changes as new discoveries and technological developments are made available;
* describe the action of unbalanced forces on the motion of objects in everyday situations, including the Earth’s gravity;
* discuss how developments in scientific knowledge and technology have contributed to finding solutions to problems involving the use of energy transfers and transformations in simple systems and how the solutions may impact on other areas of society;
* relate the structure and function of living things to their classification, survival and reproduction;
* predict the effects of environmental changes on ecosystems and how scientific understanding influences the development of some management practices;
* describe the dynamic nature of models, theories and laws in developing scientific understanding of the Earth, solar system and observed properties and behaviour of matter;
* describe processes occurring in and on the Earth and the time scales involved, as well as situations where understanding and skills from across the disciplines of Science are used in exploration for resources and obtaining and processing of materials;
* explain how advances in scientific understanding influence the choices people make about resource use and management practices in shaping sustainable futures; and
* relate the physical and chemical properties of matter to how materials are processed and used by society in everyday life and how scientists generate solutions to obtaining and making new substances from the Earth’s spheres.

COURSE OBJECTIVES AND OUTCOMES

### Values and attitudes

##### *Students:*

* *develop an appreciation of the contribution of science to finding solutions to personal, social and global issues relevant to their lives now and in the future;*
* *develop a willingness to use evidence and reason to engage with and respond to scientific and technological ideas as informed, reflective citizens;*
* *develop interest and positive, informed values and attitudes towards science and technology;*
* *recognise the importance and relevance of science and technology in their lives now and for their future.*

SC4-1VA, SC5-1VA appreciates the importance of science in their lives and the role of scientific inquiry in increasing understanding of the world around them;

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SC4-2VA, SC5-2VA shows a willingness to engage in finding solutions to science-related personal, social and global issues, including shaping sustainable futures;

SC4-3VA, SC5-3VA demonstrates confidence in making reasoned, evidence-based decisions about the current and future use and influence of science and technology, including ethical considerations.

### Working Scientifically (Skills)

##### *Students:*

* *develop knowledge, understanding of and skills in applying the processes of Working Scientifically;*
* *develop knowledge, understanding of and skills in applying the processes of Working Technologically;*

SC4-4WS identifies questions and problems that can be tested or researched and makes predictions based on scientific knowledge;

SC4-5WS collaboratively and individually produces a plan to investigate questions and problems;

SC4-6WS follows a sequence of instructions to safely undertake a range of investigation types, collaboratively and individually;

SC4-7WS processes and analyses data from a first-hand investigation and secondary sources to identify trends, patterns and relationships, and draw conclusions;

SC4-8WS selects and uses appropriate strategies, understanding and skills to produce creative and plausible solutions to identified problems;

SC4-9WS presents science ideas, findings and information to a given audience using appropriate scientific language, text types and representations.

### Knowledge and understanding

##### *Students:*

* *develop knowledge of the Physical World, Earth and Space, Living World and Chemical World, and understanding about the nature, development, use and influence of science;*
* *develop knowledge of the Natural Environment through understanding about the Physical World, Earth and Space, and Living World;*
* *develop knowledge and understanding of the Natural Environment and the Made Environment through the Material World;*
* *develop knowledge and understanding of the Made Environment through Built Environments, Information and Products;*

SC4-10PW describes the action of unbalanced forces in everyday situations;

SC4-11PW discusses how scientific understanding and technological developments have contributed to finding solutions to problems involving energy transfers and transformations;

SC4-12ES describes the dynamic nature of models, theories and laws in developing scientific understanding of the Earth and solar system;

SC4-13ES explains how advances in scientific understanding of processes that occur within and on the Earth, influence the choices people make about resource use and management;

SC4-14LW relates the structure and function of living things to their classification, survival and reproduction;

SC4-15LW explains how new biological evidence changes people's understanding of the world;

SC4-16CW describes the observed properties and behaviour of matter, using scientific models and theories about the motion and arrangement of particles;

SC4-17CW explains how scientific understanding of, and discoveries about, the properties of elements, compounds and mixtures relate to their uses in everyday life.

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**Stage 4 - Year 7 Science**

**Stage 4 - Year 8 Science**