

**Liverpool Girls’ High School**

*Innovation Excellence Learning*

**Physics**

STAGE 6 PRELIMINARY ~ COURSE OUTLINE

Physics investigates natural phenomena, identifies patterns and applies models, principles and laws to explain their behaviour.

The *Preliminary course*develops a knowledge of waves, motion, forces, fields, electricity and magnetism by focusing on increasing students’ understanding of current communication technologies, the use of electricity in the home, interaction involving vehicles (such as car crashes) and the mechanisms that maintain the physical conditions of planet Earth.

**TOPICS COVERED**

***Preliminary Course***

Physics Skills Module 8.1

***Core Modules***

* The World Communicates
* Electrical Energy in the Home
* Moving About
* The Cosmic Engine

**COURSE REQUIREMENTS**

Each module specifies content which provides opportunities for students to achieve the Physics skill outcomes. Physics modules 8.1 (Preliminary) and 9.1 (HSC) provide the skills content that must be addressed within and across each course. Teachers should provide opportunities based on the module content to develop the full range of skills content identified in Physics skills modules 8.1 and 9.1.

Students will complete a minimum of 80 indicative hours of practical experiences across Preliminary and HSC course time with no less than 35 hours in the HSC course.

**SYLLABUS OUTCOMES**

*A student …*

**P1.** outlines the historical development of major principles, concepts and ideas in physics

**P2.** applies the processes that are used to test and validate models, theories and laws of science with particular emphasis on first-hand investigations in physics

**P3**. assesses the impact of particular technological advances on understanding in physics

**P4.** describes applications of physics which affect society or the environment

**P5**. describes the scientific principles employed in particular areas of research in physics

**P6**. describes the forces acting on an object which causes changes in its motion

**P7**. describes the effects of energy transfers and energy transformations

**P8**. explains wave motions in terms of energy sources and the oscillations produced

**P9**. describes the relationship between force and potential energy in fields

**P10**. describes theories and models in relation to the origins of matter and relates these to the forces involved

**P11**. identifies and implements improvements to investigation plans

**P12**. discusses the validity and reliability of data gathered from first-hand investigations and secondary sources

**P13**. identifies appropriate terminology and reporting styles to communicate information and understanding in physics

**P14**. draws valid conclusions from gathered data and information

**P15**. implements strategies to work effectively as an individual or as a member of a team

**P16**. demonstrates positive values about, and attitude towards, both the living and non-living components of the environment, ethical behaviour and a desire for a critical evaluation of the consequences of the applications of science

**BOSTES PRELIMINARY ASSESSMENT INFORMATION**

|  |  |  |
| --- | --- | --- |
| **Component** | | **Weighting** |
| **A** | Knowledge and understanding of: • the history, nature, and practice of physics, applications and uses of physics and their implications for society and the environment, and current issues, research and developments in physics • kinematics and dynamics, energy, waves, fields and matter | 40 |
| **B** | Skills in: • planning and conducting first-hand investigations • gathering and processing first-hand data • gathering and processing relevant information from secondary sources | 30 |
| **C** | Skills in: • communicating information and understanding • developing scientific thinking and problem-solving techniques • working individually and in teams | 30 |
|  | | **100** |

EVIDENCE OF LEARNING (Assessment)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Task No.** | **Targeted Outcomes** | **Learning Context** | **Task** | **Date Due** | **Weighting** | | | **Marks** |
| A | B | C |
| 1 | P – 2, 7,11, 12, 13, 14, 15 | Electrical Energy in the Home | Open Ended Investigation | Term 1  Week 9 | 5% | 15% | 10% | 30% |
| 2 | P – 3, 4, 6, 11, 12, 13, 14, 15 | Motion | Individual Research Task | Term 3  Week 3 | 5% | 15% | 15% | 35% |
| 3 | P – 1,5, 6, 7, 8, 9, 10 | All topics | End of course examination | Term 3  Wks 9-10 | 30% |  | 5% | 35% |
| **TOTAL** | | | | | **40%** | **30%** | **30%** | **100%** |

**REPORTING PERFORMANCE AND ACHIEVEMENT IN PRELIMINARY COURSES**

The Common Grade Scale shown below is used to report student achievement and performance in the Preliminary Stage 6 year in all NSW schools.

The Common Grade Scale describes performance and achievement at each of five grade levels.

|  |  |
| --- | --- |
| A | The student demonstrates extensive knowledge of content and understanding of course concepts, and applies highly developed skills and processes in a wide variety of contexts. In addition the student demonstrates creative and critical thinking skills using perceptive analysis and evaluation. The student effectively communicates complex ideas and information. |
| B | The student demonstrates thorough knowledge of content and understanding of course concepts, and applies well-developed skills and processes in a variety of contexts. In addition the student demonstrates creative and critical thinking skills using analysis and evaluation. The student clearly communicates complex ideas and information. |
| C | The student demonstrates sound knowledge of content and understanding of course concepts, and applies skills and processes in a range of familiar contexts. In addition the student demonstrates skills in selecting and integrating information and communicates relevant ideas in an appropriate manner. |
| D | The student demonstrates a basic knowledge of content and understanding of course concepts, and applies skills and processes in some familiar contexts. In addition the student demonstrates skills in selecting and using information and communicates ideas in a descriptive manner. |
| E | The student demonstrates an elementary knowledge of content and understanding of course concepts, and applies some skills and processes with guidance. In addition the student demonstrates elementary skills in recounting information and communicating ideas. |