

**Liverpool Girls’ High School**

*Innovation Excellence Learning*

**Chemistry**

STAGE 6 PRELIMINARY ~ COURSE OUTLINE

Chemistry is the study of the physical and chemical properties of matter, with a focus on substances and their interactions. Chemistry attempts to provide chemical explanations and to predict events at the atomic and molecular level.

The *Preliminary course* develops a knowledge of atomic structure, chemical changes, rates of reaction and relationships between substances by focusing on increasing students’ understanding of the Earth’s resources, the development of increasingly sophisticated methods to extract and use metals, the importance of water on Earth and high energy carbon compounds.

The *HSC course* builds on the concepts developed in the Preliminary course, expanding on areas such as the search for new sources of traditional materials, the design and production of new materials, the management and monitoring of chemicals that have been developed and/or released as a result of human technological activity and the way in which environmental problems could be reversed or minimised. The options cover a variety of interest areas and draw on the increased information and understanding provided by improved technology to examine areas of current research.

**TOPICS COVERED IN THE PRELIMINARY COURSE**

|  |  |
| --- | --- |
| Chemistry Skills Module 8.1  **Core Modules**   * The Chemical Earth * Metals * Water * Energy |  |

**COURSE REQUIREMENTS**

Each module specifies content which provides opportunities for students to achieve the Chemistry skill outcomes. Chemistry 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 Chemistry 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 …*

1. outlines the historical development of major principles, concepts and ideas in chemistry
2. applies the processes that are used to test and validate models, theories and laws of science with particular emphasis on first-hand investigations in chemistry
3. assesses the impact of particular technological advances on understanding in chemistry
4. describes applications of chemistry which affect society or the environment
5. describes the scientific principles employed in particular areas of research in chemistry
6. explains trends and relationships between elements in terms of atomic structure, the periodic table and bonding
7. describes chemical changes in terms of energy inputs and outputs
8. describes factors that influence the type and rate of chemical reactions
9. relates the uses of carbon to the unique nature of carbon chemistry
10. applies simple stoichiometric relationships
11. identifies and implements improvements to investigation plans
12. discusses the validity and reliability of data gathered from first-hand investigations and secondary sources
13. identifies appropriate terminology and reporting styles to communicate information and understanding
14. draws valid conclusions from gathered data and information
15. implements strategies to work effectively as an individual or as a member of a team
16. 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**

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| --- | --- | --- |
| **Component** | | **Weighting** |
| **A** | Knowledge and understanding of: • the history, nature, and practice of chemistry, applications and uses of chemistry and their implications for society and the environment, and current issues, research and developments in chemistry • atomic structure, periodic table and bonding, energy, chemical reactions, carbon chemistry and stoichiometry | 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, 6, 7, 8, 11, 12, 13, 14, 15 | Gravimetric Cells | Practical Task | Term 1  Week 10 | 5% | 15% | 10% | 30% |
| 2 | P – 1, 3, 4, ,5, 7, 8, 10, 12, 13, 14, 15 | Metals | Individual Research Task | Term 2  Week 6 | 5% | 10% | 15% | 30% |
| 3 | P – 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14 | All Content | End of Course Examination | Term 3  Wk 9-10 | 30% | 5% | 5% | 40% |
| **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. |