

**Course Title: Chemistry 1/Chemistry 1 Honors/ Chemistry 1 Pre-IB/Integrated Science 2**  
**Course Number: 2003340/2003350/2003800/2002430**

| NGSS Benchmark                                 | Content Focus  | Points Possible | Cognitive Complexity   |
|--|--|-----------------|------------------------|
| <b>Reporting Category 1: Nature of Science</b> |  |                 |                        |
| SC.912.N.1.1                                   | Define a problem based on a specific body of knowledge.  | 4-3             | 4 Level 3<br>3 Level 2 |
| SC.912.N.1.6                                   | Describe how scientific inferences are drawn from scientific observations and provide examples from the content being studied.   | 2               | 2 Level 2              |
| SC.912.N.2.2                                   | Identify which questions can be answered through science and which questions are outside the boundaries of scientific investigation, such as questions addressed by other ways of knowing, such as art, philosophy, and religion.  | 2               | 2 Level 3<br>2 Level 2 |
| SC.912.N.3.3                                   | Explain that scientific laws are descriptions of specific relationships under given conditions in nature, but do not offer explanations for those relationships.   | 1               | 1 Level 2              |
| SC.912.N.3.5                                   | Describe the function of models in science, and identify the wide range of models used in science.   | 2               | 1 Level 1<br>2 Level 2 |
| Reporting category total                       |  | 10              |                        |
| <b>Reporting Category 2: Matter</b>            |  |                 |                        |
| SC.912.P.08.01                                 | Differentiate among the four states of matter.   | 1               | 1 Level 2-1            |
| SC.912.P.08.02                                 | Differentiate between physical and chemical properties and physical and chemical changes of matter.  | 2               | 2 Level 2              |
| SC.912.P.08.04                                 | Explore the scientific theory of atoms (also known as atomic theory) by describing the structure of atoms in terms of protons, neutrons and electrons, and differentiate among these particles in terms of their mass, electrical charges and locations within the atom. | 4               | 4 Level 3<br>4 Level 2 |
| SC.912.P.08.05                                 | Relate properties of atoms and their position in the periodic table to the arrangement of their electrons.   | 2               | 2 Level 2              |
| SC.912.P.08.06                                 | Distinguish between bonding forces holding compounds together and other attractive forces, including hydrogen bonding and van der Waals forces.  | 4               | 4 Level 2              |
| SC.912.P.08.07                                 | Interpret formula representations of molecules and compounds in terms of composition and structure.  | 3               | 3 Level 2              |
| SC.912.P.08.08                                 | Characterize types of chemical reactions, for example: redox, acid-base, synthesis, and single and double replacement reactions.   | 2               | 2 Level 2              |
| SC.912.P.08.09                                 | Apply the mole concept and the law of conservation of mass to calculate quantities of chemicals participating in reactions.  | 3               | 3 Level 3              |
| SC.912.P.08.11                                 | Relate acidity and basicity to hydronium and hydroxyl ion concentration and pH.  | 1               | 1 Level 2              |
| Reporting category total                       |  | 22              |                        |
| <b>Reporting Category 3: Energy</b>            |  |                 |                        |
| SC.912.P.10.05                                 | Relate temperature to the average molecular kinetic energy.  | 2               | 2 Level 2              |
| SC.912.P.10.06                                 | Create and interpret potential energy diagrams, for example: chemical reactions, orbits around a central body, motion of a pendulum.   | 1               | 1 Level 3              |
| SC.912.P.10.07                                 | Distinguish between endothermic and exothermic chemical processes.   | 2               | 2 Level 2              |
| SC.912.P.10.9                                  | Describe the quantization of energy at the atomic level.   | 3               | 3 Level 2              |
| SC.912.P.10.12                                 | Differentiate between chemical and nuclear reactions.  | 2               | 2 Level 2              |
| Reporting category total                       |  | 10              |                        |
| <b>Reporting Category 4: Motion</b>            |  |                 |                        |
| SC.912.P.12.10                                 | Interpret the behavior of ideal gases in terms of kinetic molecular theory.  | 2               | 2 Level 3              |
| SC.912.P.12.11                                 | Describe phase transitions in terms of kinetic molecular theory.   | 3               | 3 Level 2              |
| SC.912.P.12.12                                 | Explain how various factors, such as concentration, temperature, and presence of a catalyst affect the rate of a chemical reaction.  | 2               | 2 Level 3              |
| SC.912.P.12.13                                 | Explain the concept of dynamic equilibrium in terms of reversible processes occurring at the same rates.   | 1               | 1 Level 3              |
| Reporting category total                       |  | 8               |                        |

Overall Percentage for Written Test: 100%

Overall Percentage for Performance Tasks: 0%