Science Standards - Chemistry

Course Focus (Apply the following for each content standard.)

CHM.1 Identify the principles of SDA Christian values in correlation with science.
- CHM.1.1 Recognize God's power as designer, creator, sustainer, and redeemer in the universe.
- CHM.1.2 Acknowledge God as the author of all scientific principles and laws regardless of man's interpretation.
- CHM.1.3 Develop stewardship and service attitudes toward health, life, and earth's environment.
- CHM.1.4 Apply Biblical principles of Christian morality, integrity, and ethical behavior to all aspects of life.
- CHM.1.5 Equip students with Christian perspectives on scientific issues.

Course Abilities (Apply the following to each content standard.)

CHM.2 Develop abilities in science.
- CHM.2.1 Critical and creative thinking skills (analysis, evaluation, divergent questioning, modeling).
- CHM.2.2 Problem solving (scientific method).
- CHM.2.3 Cooperative learning.

CHM.3 Be able to apply science knowledge and skills to a variety of purposes.
- CHM.3.1 Recognize scientific principles and laws as tools to solve problems in everyday life.
- CHM.3.2 Apply the scientific method in analysis of controversial topics, e.g., cloning, global warming, stem cell research.
- CHM.3.3 Read, write, and interpret scientific documents (lab write-ups, journals, scientific publications).
- CHM.3.4 Conduct research in the content area.
- CHM.3.5 Engage in various uses of technology.

Course Content Topics: Structure and Properties of Matter, Chemical Interactions, Stoichiometry, Solutions (understand, explore, analyze, apply)

CHM.4 Be able to understand basic chemistry concepts.
- CHM.4.1 Recognize God as the designer and creator of matter with inherent properties and laws.
- CHM.4.2 Demonstrate understanding of structure and properties of matter.
- CHM.4.3 Describe the interactions of matter and energy (bonding, chemical reactions, conservation).
- CHM.4.4 Integrate balanced equations, conversion factors, ratio and proportion, and dimensional analysis.
- CHM.4.5 Identify the types and properties of solutions.

CHM.5 Be able to safely explore chemistry concepts using the scientific method.
- CHM.5.1 Explore the design of the periodic table and structure of molecules.
- CHM.5.2 Examine the relationship between energy and chemical reactions (bond, activation, thermal).
- CHM.5.3 Solve stoichiometric problems with appropriate chemical and mathematical skills.
- CHM.5.4 Investigate factors that define and affect solutions (pH, concentration, temperature, pressure).

CHM.6 Be able to analyze chemical data.
- CHM.6.1 Correlate the relationship between periodicity in the periodic table with molecular structure.
- CHM.6.2 Interpret the relationship between energy and chemical reactions.
- CHM.6.3 Evaluate conditions and factors that affect stoichiometric results.
- CHM.6.4 Predict solution changes as factors are manipulated.

CHM.7 Be able to apply the principles of chemistry to health, life, and the physical environment.
- CHM.7.1 Develop an increased respect for the designer of all matter in the universe.
- CHM.7.2 Utilize various chemical resources to influence lifestyle choices (warning labels, MSDS, nutritional labels, Internet resources).
- CHM.7.3 Implement chemical principles to chemistry-related issues in society.