



Adventist Education

A JOURNEY TO EXCELLENCE

Chemistry

2010

**SECONDARY SCIENCE STANDARDS
IN SEVENTH-DAY ADVENTIST SCHOOLS**

OFFICE OF EDUCATION | North American Division Seventh-day Adventist Church

Science Standards—Chemistry

COURSE FOCUS [Apply the following for each content standard.]

CHM.1 Identify SDA Christian principles and 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 Develop critical and creative thinking skills (analysis, evaluation, divergent questioning, modeling).
- CHM.2.2 Understand and utilize the scientific method of problem solving.
- CHM.2.3 Utilize the principles and methodologies of 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: 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 and molecular structure in the periodic table.
- 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.