

**CHEMISTRY: CONTENT FOR TEST PREP**  
**Grades 6-12**  
**60 points per certificate**

**7/12**  
**#1-015-001**

**General Objective**

The purpose of this component is to increase the knowledge and skills of participants in the Chemistry competencies and skills. Upon successful completion of the component, all participants will have a basic knowledge of curriculum, and material covered on the teacher certification test.

**Specific Objectives**

Upon successful completion of this course, participants will be able to:

- Apply the appropriate use of scientific measurements and calculations to interpret the nature of matter.
- Relate the effect of changes in temperature, pressure and concentrations on solutions.
- Understanding the physical and chemical properties of matter and the way they define the nature of matter
- Distinguish among different forms of energy - (thermal, electrical, and nuclear).
- Relate temperature and heat to the motion of particles (atoms, molecules) using the kinetic molecular theory.
- Interpret a phase diagram of a pure substance.
- Interpret a heating / cooling curve of a substance.
- Calculate thermal changes associated with chemical reactions, such as heats of reaction, heats of formation, and/or heats of combustion, from thermo chemical data.
- Analyze entropy changes during solution formation, phase changes, and chemical reactions.
- Predict spontaneity of chemical process given initial and final values of Gibbs free energy, temperature, enthalpy and or entropy.
- Relate regions of electromagnetic spectrum to the energy, wavelength and frequency of photons.
- Identify the effects of various types of electromagnetic radiation (UV, IR) on the chemical or physical properties of matter.
- Recognize that energy can be transformed from one form to others and that the total energy in a closed system is conserved.
- Knowledge of bonding and molecular structure.
- Knowledge of atomic theory and structure.
- Knowledge of chemical reactions and stoichiometry.

**Description of Activities**

Activities held under this component will be designed to accomplish the specific objectives outlined above. They may include, but will not be limited to, such things as lectures, discussions, demonstrations, observations, online activities and hands-on activities.

**Evaluation of Participants**

Evaluation of the specific objectives will be determined by the activity leader or designee through analysis of student performance data affected by training activities, portfolios maintained by the training participant, documented observation by administrators, rubrics developed for special area curriculum, teacher-provided test results/grade books, or curriculum alignment data.

**Evaluation of Activity**

An online evaluation for this activity will be conducted through the Santa Rosa Professional Growth System (PGS).