Rochester Community Schools

Chemistry Credit By Exam

Preparation for taking the Chemistry exam

GRADE: 10 - 12

PREREQUISITE: Physical Science, Algebra 2 strongly recommended (Algebra 2 may be taken concurrently)

This course is recommended for college bound students. The structure and behavior of matter is studied. Topics include: atomic theory, periodic table, bonding, energy, problem solving, measurements, chemical reactions, gas laws, equilibrium, solutions and acids and bases. Laboratory work is intended to help develop and support topic areas. A large part of the course requires a comprehensive understanding of Algebra.

To prepare for the Credit by Exam (CBE) for this course, you will need to do the following:

The following concepts will be covered on this assessment.

- Composition of Matter: Conservation of Matter, Physical and Chemical Changes, Elements/Mixtures/Compounds, Dimensional Analysis (unit conversions)
- Energy: Kinetic Molecular Theory, Gas Laws, Avogadro's Law, Moles, Specific Heat Capacity, Energy Bar Charts (LoL diagrams), Calorimetry, Phase Diagrams, Heating/Cooling Curves
- Atomic Structure: Structure of the Atom, Bohr Models, Nuclear Reactions (fission, fusion, radioactive decay), Atomic Emission Spectra, identifying elements of stars, evidence for Big Bang theory
- Analysis of Bonding: Coulombic Attraction, Ionic and Covalent bonds, Properties of substances with different bonds, periodic trends, chemical formulas and names, intermolecular forces
- Chemical Reactions: Types of reactions, predicting products, balancing equations, stoichiometry, limiting reactants, rates, energy

The following skills/concepts should be understood/reviewed and students will need to apply them within the assessment and their writing task:

- Interpret and analyze data tables and graphs
- Evaluate models of scientific concepts
- Evaluate effectiveness of experimental setups
- Calculate variables associated with concepts (formula sheet will be provided)

- Analyze lab techniques and procedures to determine appropriate materials, steps to follow, and error analysis

Michigan K-12 Science Standards

- HS-PS1-1
- HS-PS1-2
- HS-PS1-3
- HS-PS1-4
- HS-PS1-5
- HS-PS1-6
- HS-PS1-7
- HS-PS1-8
- HS-PS3-1
- HS-PS3-2
- HS-PS3-3
- HS-PS3-4
- HS-PS3-5
- HS-PS4-1
- HS-PS4-2
- HS-PS4-3
- HS-PS4-4
- HS-PS4-5
- HS-ESS1-1
- HS-ESS1-2
- HS-ESS1-3