

Course Description

ADVANCED PLACEMENT CHEMISTRY SCI561 (Sem 1), SCI562 (Sem 2)

Year Course 2 Credits

Open to: juniors and seniors NCAA Approved Prerequisite: Algebra II, Biology, Chemistry or Honors Chemistry, and instructor recommendation This course is designed to be equivalent to a college introductory chemistry course usually taken by science majors in their first year. The course of study expands the students' understanding of chemical principles and their abilities to analyze and solve problems. Laboratory experiments enhance these objectives through the use of new techniques and equipment, while written lab reports demand critical interpretation of data and use of mathematical and verbal skills. This course will prepare students to successfully take the AP examination in May, which could earn the students college credit based upon their results on the exam. Alignment to the Iowa Core Curriculum: Understands and applies knowledge of: structure of matter, atoms and electronic structure, energy and chemical reactions, thermodynamics, acids and bases, chemical equilibria, properties of gases, liquids, solids, and solutions.

Standards

Understands and apply knowledge of the structure of atoms. Understand and apply knowledge of the structure and properties of matter. Understand and apply knowledge of chemical reactions. Understand and apply knowledge of conservation of energy and increase in disorder. Understand and apply knowledge of interactions of energy and matter.

BIG IDEA CONCEPTS

Big Idea 1. The chemical elements are fundamental building blocks of matter, and all matter can be understood in terms of arrangements of atoms, ions, or molecules and the forces between them.

Big Idea 2. Chemical and physical properties of material can be explained by structure and the arrangement of atoms, ions, or molecules and the forces between them.

Big Idea 3. Changes in matter involve the rearrangement and or reorganization of atoms and or the transfer of electrons.

Big Idea 4. Rates of chemical reactions are determined by details of the molecular collisions.

Big Idea 5. The laws of thermodynamics describe the essential role of energy and explain and predict the direction of changes in matter.

Big Idea 6. Any bond or intermolecular attraction that can be formed can be broken. These two processes are in a dynamic competition, sensitive to initial conditions and external perturbations.

Assessment

The summative assessment at the end of each chapter, individually completed projects or labs and the final assessment are the only major points that count for the final grade. Some homework will be given throughout the week that will be worth less towards the final grade.

Content

Study of matter and its changes, Scientific measurement, Atomic structure, Periodic table, Bonding, Names and Formulas, Stoichiometry, Chemical reactions, Gases, Water and aqueous solutions, Thermochemistry, Reaction rates, Equilibrium, Acid and bases, Oxidation and reduction reactions, Electrochemistry, Organic and Nuclear chemistry.

Instructional Strategies

The class requires you to understand the concepts that are presented via lecture, demonstrations, labs and projects. The textbook is a resource that should be utilized. The summative assessments will require an in-depth understanding in order to analyze, synthesize and manipulate variables from the basic concepts. Although many activities are team based the only scores that affect the grade are individual test scores.

Resources

The main resource is the textbook, Chemistry, printed by Pearson Prentice Hall, copyright 2008. Other resources include the "Workbook for General Chemistry" by Shakhshiri, lecture notes, demonstrations, labs, projects and review games. If additional help is needed please consider coming into the classroom before school any day from 7:00 until 7:30, unless a teacher meeting is scheduled.

Expectations

Be Here, Be Prepared, Be Respectful.

Assignments are provided for students to have a thorough understanding of the material. Many problems are assigned and the student must be able to perform these practice problems with a degree of mastery prior to the test. Students may find that they do not need to do all the practice problems assigned if they understand how to do the problems. Some students may find that they need to do more problems than what was assigned because they still did not master the concepts and problem solving required.

Grading Plan

Grading scale found on page 17 in planner. 90% = A, 80% = B, 70% = C. 60% = D. Tests, individual projects, and homework assignments are the only points that affect the grade.

Communication Plan

The main venue for tracking progress will be with the power school.

Students and parents may contact me via the email; mhennessy@dbqschools.org and through the school phone system 552-5327.