Common Course Outline
CHEM 100
Chemistry and Its Role in Society
3 Semester Hours

The Community College of Baltimore County

Description

CHEM 100--3 Credits--Chemistry and Its Role in Society

Illustrates how chemistry is intimately involved in many aspects of our life; explores areas of interaction between chemistry and human society including chemistry of the earth, chemistry of the atmosphere, polymers, food, household chemicals, and energy.

3 credits 3 lecture hours per week

Prerequisites: (ENGL 051 or ESOL 051 or LVE1) and (RDGN052 or LVR2) and (MATH082 or MATH 013 or LVM2)

CHEM 102 is the laboratory associated with this course.

Overall Course Objectives

Upon completion of this course the student will be able to:

1. describe the characteristics of science and the use of the scientific method as a way of gaining knowledge;
2. describe or recognize the difference between observations, hypotheses, scientific laws and theories;
3. make conversions using the metric system;
4. make use of significant figures in evaluating data;
5. describe Dalton's atomic theory and how it has evolved since the discovery of electricity, isotopes, and atomic particles;
6. describe the structure of atoms, and their component parts;
7. explain the process and give examples of radioactivity, alpha particles, beta particles and gamma radiation;
8. explain the concept of half-life and how it has been used to date materials;
9. utilize the periodic table to predict the properties of elements and compounds;
10. classify compounds as ionic or covalent based on their chemical formulas;
11. describe the general properties of organic compounds and classify them into one of the following categories: alkanes, alkenes, alkynes, aromatics, alcohols, ethers, aldehydes, ketones, organohalides, carboxylic acids, esters, amides, amines, carbohydrates, fats, proteins;
12. identify the general structural features and properties of carbohydrates, fats and proteins and compare caloric values;

13. describe some of the chemicals found in household products;
14. explain and describe how chemistry relates to environmental problems such as use of fossil fuels, use of nuclear energy, air pollution and water pollution; and
15. explain how the First and Second Laws of Thermodynamics relate to energy use.

Major Topics

I. Science and Chemistry
II. Matter and Energy
III. Measurement
IV. Atoms and Atomic Structure
V. Periodic Table
VI. Chemical Bonding: Ionic, and Covalent Bonds
VII. Chemistry of the Atmosphere
IX. Chemistry of the Earth and Water
X. Organic Chemistry
XI. Polymers
XII. Food Chemistry
XIII. Household Chemicals
XIV. Energy Production (The First and Second Laws of Thermodynamics)

Course Requirements

Grading/exams: Grading procedures will be determined by the individual faculty member but will include at least two 1-hour exams and a 2-hour final exam.

Writing: Individual faculty member may assign a term paper in addition or to replace one of the 1-hour exams.

Other Course Information

This course may be used to fulfill three credits of the General Education requirement in Physical and Biological Sciences.

While it is expected that a majority of these topics will be covered, faculty members may exclude some topics and include additional topics consistent with department practices.

Date Revised: 3/10/07