BARTON COMMUNITY COLLEGE
COURSE SYLLABUS
CHEM 1802

I. GENERAL COURSE INFORMATION

Course Number: CHEM 1802
Course Title: Fundamentals of General Chemistry
Credit Hours: 5
Prerequisite: MATH 1821 Basic Algebra with a grade C or better OR MATH 1806 Technical Mathematics with a grade C or better (or higher level math course) OR having passed Module 5 in College Preparatory Mathematics OR appropriate math placement score.
Division/Discipline: Academic Division/Chemistry
Course Description: This one semester course provides a study of inorganic and organic chemistry with less emphasis on problem solving than the College Chemistry sequence and more on the practical aspects of chemistry. This course is designed for those persons who need chemistry as a one-year terminal course, such as pre-agriculture, pre-baccalaureate nursing, home economics, nutrition, and similar majors. (3 hours lecture/week + 3 hours lab/week)

II. INSTRUCTOR INFORMATION

III. COLLEGE POLICIES

Students and faculty of Barton Community College constitute a special community engaged in the process of education. The College assumes that its students and faculty will demonstrate a code of personal honor that is based on courtesy, integrity, common sense, and respect for others both within and outside the classroom.

Plagiarism on any academic endeavors at Barton Community College will not be tolerated. The student is responsible for learning the rules of, and avoid instances of, intentional or unintentional plagiarism. Information about academic integrity is located in the Student Handbook or at the following link: http://academicintegrity.bartonccc.edu.

The College reserves the right to suspend a student for conduct that is determined to be detrimental to the College's educational endeavors as outlined in the College Catalog, Student Handbook, and College Policy & Procedure Manual. (Most up-to-date documents are available on the College webpage.)

Anyone seeking accommodation under provisions of the American with Disabilities Act (ADA) should notify Student Support Services via email at disabilityservices@bartonccc.edu.

IV. COURSE AS VIEWED IN THE TOTAL CURRICULUM

Fundamentals of General Chemistry is an approved general education course at BCC, which can be used to fulfill degree requirements as a laboratory science course in the natural/physical science. In addition, it is required (or recommended) to be taken by students enrolled in chemistry/physical science programs at the college, including Biological Sciences, Medical Lab Technician, and certain pre-professional

programs (e.g. Pre-Dentistry, Pre-Forestry, Pre-Medical Technology, Pre-Pharmacy, Pre-Wildlife Sciences, Pre-Chiropractic, Pre-Veterinarian etc.).

This course is transferable to all Kansas Regents' Institutions and may be used to help fulfill program requirements. The transferability of all college courses will vary among institutions, and perhaps even among departments, colleges, or programs within an institution. Institutional requirements may also change without prior notification. It is the student's responsibility to obtain relevant information from the intended transfer institution to ensure that the courses the student enrolls in are the most appropriate set of courses for the transfer program (http://bartonccc.edu/transfer/schools).

V. ASSESSMENT OF STUDENT LEARNING

Barton Community College assesses student learning at several levels: institutional, program, degree and classroom. The goal of these assessment activities is to improve student learning. As a student in this course, you will participate in various assessment activities. Results of these activities will be used to improve the content and delivery of Barton's instructional program.

<u>Course Outcomes, Competencies, and Supplemental Competencies:</u>

A. Explain the chemical context of topics as they relate to the natural sciences and society.
   1. Explain and use scientific methods.

B. Demonstrate the knowledge of atoms, the periodic table, molecular structure, and bonding.
   1. Develop and express a general overview of modern atomic structure including the major particles like electron, proton, neutron, ions, and isotopes.
   2. Explain and relate periodic trends that apply to the elements of the periodic table.
   3. Explain and relate how chemical structures affect the boiling points, melting points, and freezing points of different substances.
   4. Write Lewis Symbols for the common atoms and ions.
   5. Explain how the molecular structure predicts the polarity of a substance.
   6. Write condensed and structural formulas for simple hydrocarbons.
   7. Identify the common functional groups found in organic compounds.
   8. Draw and name the simple aliphatic and aromatic hydrocarbons using International Union of Pure and Applied Chemistry (I.U.P.A.C.) nomenclature.

C. Recognize differences between phases of matter.
   1. Describe and relate the differences between chemical and physical changes.
   2. List, name, and relate properties of the liquid state: compressibility, viscosity, surface tension, vapor pressure, boiling temperatures, etc.

D. Identify and analyze different types of chemical reactions, including energetics and stoichiometry.
   1. State Le Chatelier's Principle and relate this to the concept of reversibility.
   2. Relate the roles of thermodynamics and kinetics to the rates of chemical reactions.
   3. Examine the role of activation energy in a chemical reaction.
   4. Describe the way surface area, concentration, and temperature affect the rate of a chemical reaction.
   5. Classify chemical reactions in various types: acid-base, redox, etc.

E. Solve problems involving solutions and gases.
   1. Solve and apply stoichiometry of chemical equations.

2. Define and apply the concepts underlying the various gas laws: Boyle's, Charles's, Avogadro's, Ideal Gas Law, and Dalton's Law.

F. Record quantitative and qualitative data accurately. Critically analyze data and chemical information from various sources responsibly and accurately.
   1. Apply, express, and convert the various units of measure.
   2. Report and apply the use of significant figures and scientific notation.

G. Apply knowledge of good laboratory practices.
   1. Demonstrate good lab safety.
   2. Distinguish between data and results.
   3. Acquire data using balances and volumetric glassware.
   4. Explain observations from the experimental data to present relevant conclusions pertaining to the experimental procedure.

VI. INSTRUCTOR'S EXPECTATIONS OF STUDENTS IN CLASS

VII. TEXTBOOKS AND OTHER REQUIRED MATERIALS

VIII. REFERENCES

IX. METHODS OF INSTRUCTION AND EVALUATION

Since laboratory activities are integral to the learning outcomes of this lab science course, students must pass the laboratory portion of the class in order to successfully complete ("pass") the course.

X. ATTENDANCE REQUIREMENTS

XI. COURSE OUTLINE