

# Syllabus - CHE 122 - Basic Chemical Principles

Fall Semester, 2009  
Class: MCC, Room 402

4 semester hours credit  
Tues/Thurs 8:00 - 9:15 AM

Professor: David H. Magers, Ph.D.

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**Instructional Materials:** The required text is Introduction to General, Organic, and Biochemistry, 9<sup>th</sup> edition by Frederick A. Bettelheim, William H. Brown, Mary K. Campbell, and Shawn O. Farrell. In addition to this text you will need a scientific calculator. The required laboratory manual may be purchased from the MC Student Affiliates Chapter of the American Chemical Society on the first day of lab. All three of the laboratory sections meet in Hederman Science, room 311, on Mondays. The pre-lab meets in Hederman Science, room 312.

**Prerequisites:** There are no prerequisites for this course; however, a general knowledge of algebra is assumed.

**Disclaimer:** Although I expect to conduct the course according to the following, I reserve the right to make modifications if circumstances dictate.

**Course description:** A study of the basic principles of general and inorganic chemistry. Chemical calculations are stressed.

**Rationale:** This course provides a general understanding of chemistry for the non-science major as well as a foundation in chemistry for future study for the science major or nursing major. Development of problem solving and critical thinking skills are stressed.

**Attendance:** Your attendance at all class meetings is expected. Please refer to the *Mississippi College Undergraduate Bulletin* for a discussion of the university's attendance policy. Absences are recorded on the grade report that is mailed at the end of the semester. If a regular class meeting is missed, it is the student's responsibility to obtain any assignments or instructions that were given by the instructor. Missing a class is **not** an excuse for not preparing for the next class meeting or not having an assignment ready on time. **Don't miss a scheduled test!** In the event of an extreme emergency and an excused absence, a make-up test will be given. The test must be made up prior to the graded tests being returned to the class. Make-up tests are usually different from the regular test and may be more difficult. If the student cannot return to class until after the tests have been returned, the grade on the final exam may be substituted for the missing grade.

**Assignments:** Exercises from the text will be assigned for each chapter. These assignments may or may not be taken up and graded, but they are highly recommended. They are frequently the source for pop quiz material.

**Course Overview:** The course covers material presented in Part One of the textbook (chapters 1-9). The laboratory provides the opportunity to measure physical and chemical constants related to the theory studied in class. The lab should demonstrate established principles and reinforce and expand one's understanding of the basic concepts.

**Brief Course Outline:**

- I. Matter and Energy
- II. Measurement and significant figures
- III. Atoms and elements
- IV. Chemical bonds, molecules, and ionic compounds
- V. Formula weights, moles, and chemical reactions
- VI. Gases, liquids, and solids
- VII. Solutions and colloids
- VIII. Reaction rates
- IX. Chemical equilibria
- X. Acids and bases
- XI. Nuclear chemistry

**Grading:** Three tests will be given during the semester, each with a value of 100 points. Unannounced pop tests are given often. Several scores will be dropped. Only the top 10 scores will be used in your final average. Pop tests that are missed are not made up. The final exam is comprehensive and is worth 200 points. The total points from the laboratory (maximum of 140) is added to give a grand total. The course grade is determined by dividing your grand total by the total possible points.

Final letter grades are determined on an 10-point scale. Please refer to the *Mississippi College Undergraduate Bulletin* for a discussion of the university's grading system and how quality points are assigned.

**Methods of Instruction:** Class will consist primarily of lectures and working problems.

**Required Practices:** You are expected to read the appropriate sections of your text and work any problems assigned before coming to class. Also, as previously mentioned, you will need a good scientific calculator and be fairly proficient with it.

**Academic integrity:** Mississippi College students are expected to be honest. Please refer to the *Mississippi College Undergraduate Bulletin* for a discussion of honesty. Also refer to the *Mississippi College Tomahawk* or to University Policy 2.19.

**Important Dates:**

Fall Break is October 5<sup>th</sup> and 6<sup>th</sup>.

National Chemistry Week is October 18<sup>th</sup> through October 24<sup>th</sup>

Homecoming is October 31<sup>st</sup>.

The last day to drop a class is Friday, October 30<sup>th</sup>.

Thanksgiving Holidays are November 25<sup>th</sup> through the 29<sup>th</sup>.

The Final Exam in this class is Tuesday, December 15<sup>th</sup> at 8:00 AM.

## **Selected Topics**

1. Matter and Measurement

2. Atoms, Molecules, and Ions, formulas and Electronic Structure & Bonding

3. Stoichiometry

4. Chemical reactions

5. Gases

6. Thermochemistry

7. Intermolecular forces, liquids, and solids

## **Learning Objectives**

The student will be familiar with the measuring systems and units used in chemical calculations.

The student will be familiar with general structure and nomenclature of atoms, molecules, and ions. This will include the electronic structure of atoms as well as covalent bonding in molecules and ionic bonding in compounds.

The student will be able to perform stoichiometric calculations.

The student will have a basic knowledge of precipitation reactions, acid-base reactions, and oxidation-reduction reactions.

The student will have knowledge of the Kinetic Molecular Theory of Gases and how volume, pressure, and temperature of gases are related.

The student will have an understanding of the First Law of Thermodynamics.

The student will have a general understanding of intermolecular forces and how they relate to the phases of matter.