Coffeyville Community College

CHEM-101

COURSE SYLLABUS

FOR

FUNDAMENTALS OF CHEMISTRY

Amy Lumley
Instructor

COURSE NUMBER: CHEM-101 **COURSE TITLE:** Fundamentals of Chemistry

CREDIT HOURS: 5

INSTRUCTOR: Amy Lumley

OFFICE LOCATION: Room 209, Math/Science Office, Arts and Sciences Building

PHONE: 620-251-7700 ext. 2180

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OFFICE HOURS: See schedule posted on office door

PREREQUISITE(S): One year of high school algebra, or one semester of algebra at the college level

REQUIRED TEXT AND MATERIALS: *The Extraordinary Chemistry of Ordinary Things*, Carl Snyder. John Wiley, 2003. 4th Ed.

Calculator

COURSE DESCRIPTION: The course is designed for non-majors in science, such as agriculture, nursing, home economics, etc., who need one semester of college chemistry. It will give students an opportunity to master the fundamental principles of chemistry, and basic techniques in the laboratory. The course includes three credit hours of lecture and two credit hours of lab.

EXPECTED LEARNER OUTCOMES: Upon completion of this course, the student will be able to:

1. Atoms and the Periodic Table.
2. Compounds.
3. Reactions.
4. Properties of solids, liquids, and gases.
5. Solutions.
6. Organic Chemistry.
7. Nuclear Chemistry.
8. Application of Chemistry to Real World.
9. Measurements and Properties.

LEARNING TASKS & ACTIVITIES:

The class will meet during the scheduled class time for lecture and discussion. Lab periods will be used for experimentation and/or discussion.

ASSESSMENT OF OUTCOMES:

The following evaluative techniques may be used:

1. Lecture Exams
2. Lab Quizzes
3. Lecture Quizzes/Attendance
4. Lab Write-ups
5. Presentation
6. Homework Assignments
7. Lecture Final

All assignments will be assigned points. At the end of the semester, your total points will be divided by the total possible to arrive at a percentage. The grading scale is as follows:

90-100%	A
80-89%	B
70-79%	C
60-69%	D
0-59%	F

ATTENDANCE POLICY:

Each student is expected to attend all lectures, discussions, and labs. Attendance will be taken daily. It is the responsibility of the student to make definite arrangements with the instructor for make-up work **before** going on a field trip or other college-sponsored events. If a student does not make up the missed work within a week, a **ZERO** will be assigned to the missed work. Only excused absences will be accepted for make-up work.

ACADEMIC INTEGRITY:

Dishonesty of any kind on examinations or on assignments will not be tolerated.

COMPETENCIES:

ATOMS AND THE PERIODIC TABLE

1. Recognize the three major subatomic particles and their general arrangement in the atom
2. Identify an element from its symbol and/or provide a symbol for a given element
3. Calculate amounts of subatomic particles within an isotope
4. Relate the properties of the elements to their relative positions in the periodic table

COMPOUNDS

1. Distinguish between ionic, covalent, and polar covalent compounds
2. Create Lewis symbols/structures for various elements and simple molecules
3. Determine the name of simple, inorganic molecules given the formula, and the formula given the name
4. Calculate the formula or molecular mass of a compound
5. Covert between mass, moles, and number of molecules of a substance

REACTIONS

1. Identify and balance simple chemical reactions equations
2. Predict the products of simple reactions
3. Perform simple stoichiometric calculations

PROPERTIES OF SOLIDS, LIQUIDS, AND GASES

1. Know the molecular differences in the structure of solids, liquids, and gases and how that can affect the properties
2. Solve problems involving the relationships between volume, temperature, and pressure
3. Identify various intermolecular forces
4. Distinguish between various classes of matter
5. Identify changes and properties as physical or chemical

SOLUTIONS

1. Be able to list and describe the factors that affect solubility
2. Understand how the concentration of solutions is expressed
3. Identify between acids and bases and describe the difference between strong and weak
4. Distinguish between acidity and basicity on the pH scale
5. Perform simple pH calculations

ORGANIC CHEMISTRY

1. Define and identify alkanes, alkenes, alkynes, an cycle hydrocarbons
2. Define, identify, and illustrate the various organic functional groups

3. Demonstrate the ability to name and illustrate the structure of aliphatic and aromatic compounds

NUCLEAR CHEMISTRY

1. Classify nuclear reactions
2. Identify different types of ionizing radiation
3. Describes uses of radioactivity

APPLICATION OF CHEMISTRY TO THE REAL WORLD

1. Discuss how chemistry applies in personal lives, economy, energy, and environment

MEASUREMENT AND PROPERTIES

1. Identify and use significant digits
2. Compare and contrast measurements in English and SI
3. Be able to convert between English and SI
4. Use proper measuring devices
5. Calculate density

This syllabus is subject to revision with prior notification to the student by the instructor.