

I. COURSE INFORMATION

- A. Chemistry 125 College Chemistry I
- B. 5 credit hours
- C. Kotz, P. Treichel, Townsend, and D. Treichel. *Chemistry & Chemical Reactivity*. 10th ed. Kentucky: Cengage Learning, 2019
- D. Prerequisites: Student must be eligible for the following courses: MAT 105 College Algebra, COL 101 English Composition I
- E. KRSN: CHM 1010 Chemistry I for Majors with Lab

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

II. COURSE DESCRIPTION

College Chemistry I is an integrated lecture and laboratory course for students planning to take additional courses in chemistry or as a chemistry major. This course covers the fundamental concepts of chemistry as they apply to the science of the composition and structure of matter and the changes that matter undergoes. The major areas include the study of elements, compounds, the physical states, calculations, chemical reactions, and nomenclature.

III. LEARNING OUTCOMES

- A. Explain the processes involved in the scientific method, and be able to apply it to investigate natural phenomena and solve problems
- B. Explain the design and significance of experiments that led to the adoption of modern atomic theory
- C. Recognize and interpret isotopic notation; understanding the relationship between average atomic masses and isotopic masses (example: calculating the average mass of an element given isotopic masses and natural abundance)
- D. Relate atomic mass to composition in terms of subatomic particles
- E. Descriptive chemistry of ionic and covalent compounds
- F. Describe and understand general properties of solutions
- G. Understand and demonstrate chemical reactions and stoichiometry
- H. Understand and describe properties of solids, liquids, and gases
- I. Describe, define, and perform calculations involving basic concepts of thermodynamics
- J. Conceptually and quantitatively relate spectroscopic observation of atoms to quantum mechanical theories
- K. Understand, describe and explain molecular bonding and structure
- L. Work in the laboratory in accordance with good laboratory practices
- M. Gather and record qualitative and quantitative data accurately
- N. Handle and evaluate data in logical, productive, and meaningful ways
- O. Correlate laboratory work with principle topics in College Chemistry I lecture

IV. MAJOR CONTENT AREAS

- A. Matter, Metric System, Measurements, and Calculations, and Atoms and Molecules
- B. Chemical calculations and chemical reactions
- C. Quantum Theory of the Atom and the Periodic Table
- D. Compounds: bonding and structure
- E. The Physical States: liquids, solids, and gases
- F. Thermochemistry

V. ASSIGNMENTS (may include but are not limited to)

- A. Homework assignments
- B. Chapter quizzes and unit exams
- C. Laboratory exercises

D. Final examination

VI. EVALUATION METHODS (may include but are not limited to)

A. Quizzes and exams

B. Lab exercises

C. Assignments

D. Attendance and participation

E. Final exam