

University of Arkansas – Fort Smith  
5210 Grand Avenue  
P. O. Box 3649  
Fort Smith, AR 72913–3649  
479–788–7000

## General Syllabus

### CHEM 1401 College Chemistry I Laboratory

Credit Hours: 1

Lecture Hours: 0

Laboratory Hours: 3

Prerequisite or corequisite: CHEM 1403 College Chemistry I.

Effective: 2018~2019

#### I. Course Information

##### A. Catalog Description

Investigative experience in basic chemistry necessary for advanced courses in science, to include the theoretical basis of atomic structure and bonding, stoichiometry, thermochemistry, and physical properties of matter.

#### I. Student Learning Outcomes

##### A. Subject Matter

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

1. Observe the safety rules in a chemistry laboratory and ability to handle hazardous material and emergency situations
2. Determine the formula of an unknown chemical substance
3. Identify unknown samples through qualitative analysis
4. Understand the principle and application of paper chromatography
5. Determine the molar mass of a volatile liquid
6. Understand the atomic structure through atomic spectrum
7. Understand the chemical bonding through molecular models

##### B. University Learning Outcomes

College Chemistry I Laboratory enhances student abilities in the following areas:

##### Analytical Skills

**Critical Thinking Skills:** Students will identify a problem or issue and will research, evaluate, and compare information from varying sources in order to evaluate authority, accuracy, recency, and bias relevant to the problems/issues. Students will generate solutions/analysis of problems/issues evaluated and will assess and justify the solutions and/or analysis.

**Communication Skills (written and oral)**

Students will communicate proficiently. Students will compose coherent documents appropriate to the intended audience and effectively communicate orally in a public setting.

**Ethical Decision Making**

Students will model ethical decision-making processes. Students will identify ethical dilemmas and affected parties and will apply ethical frameworks to resolve a variety of ethical dilemmas.

**Global & Cultural Perspectives**

Students will reflect upon cultural differences and their implications for interacting with people from cultures other than their own. Students will demonstrate understanding or application of their discipline in a global environment and will demonstrate how their discipline impacts or is impacted by different cultures.

**III. Major Course Topics**

- A. Safety
- B. Formulas and Stoichiometry
- C. Properties of Matter
- D. General Laboratory Techniques and Procedures
- E. Data Analysis
- F. Heat and Chemical Processes
- G. Qualitative analysis
- H. Molecular models and structure of chemical molecules
- I. Atomic Spectra
- J. Properties of Gases