

University of Arkansas – Fort Smith  
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## General Syllabus

### CHEM 1413 College Chemistry II

Credit Hours: 3

Lecture Hours: 3

Laboratory Hours: 0

Prerequisite: CHEM 1403/1401 College Chemistry I/Laboratory.

Prerequisite or corequisite: CHEM 1411 College Chemistry II Laboratory.

Effective: 2018~2019

#### I. Course Information

##### A. Catalog Description

Covers introductory organic chemistry, chemical equilibrium, thermodynamics, solubility equilibria, kinetics, acid-base theory and oxidation-reduction. (ACTS: CHEM 1424; must have CHEM 1413/1411)

#### II. Student Learning Outcomes

##### A. Subject Matter

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

1. Understand various intermolecular forces and their contributions to physical properties of substances.
2. Apply the principles of atomic and molecular structures to interpretation and prediction of chemical and physical behavior of various substances.
3. Understand solution properties and do concentration related solution calculations.
4. Describe the periodic patterns of chemicals and chemical properties of main-group elements.
5. Interpret and solve equilibrium problems mathematically.
6. Apply the principles of chemical kinetics.
7. Predict and explain the chemical behavior of acids and bases on the basis of their molecular structures.
8. Describe the fundamental functional groups of organic compounds and the basic physical and chemical properties of various classes of organic compounds.

##### B. University Learning Outcomes

College Chemistry II 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. Intermolecular Forces
- B. Solutions
- C. Periodic Properties of Main Group Elements
- D. Kinetics and Equilibria/Mechanisms
- E. Acid-Base and Ionic Equilibria
- F. Thermodynamics
- G. Organic Chemistry
- H. Oxidation/Reduction/Electrochemistry