

## General Chemistry II

### CHM 1046

**Course Description:** This course includes topics such as intermolecular forces, chemical kinetics, equilibrium, acids and bases, elementary thermodynamics, and electrochemistry.

**Prerequisites:** CHM 1045 or CHM 1050, each with a grade "C–" or better. This course includes topics such as intermolecular forces, chemical kinetics, equilibrium, acids and bases, elementary thermodynamics, and electrochemistry.

**Course Learning Objectives** (including liberal studies learning objectives assigned to the course):

Upon completion of this course, students will be able to:  
generally

- Use chemistry concepts and terms to describe everyday phenomena.
- Use scientific thinking to solve real-world problems.
- Appreciate the types of problems chemistry can be used to solve.
- Engage in inquiry (especially by asking why and how questions).
- Evaluate the reasonableness of your own and other people's answers to questions.
- Make reasonable estimates and recognize trends.
- Use images, diagrams, and structural models to represent chemical phenomena.
- Think critically and cogently about causal relationships with scientific reasoning.
- Assess previous experimentation and published scientific results.
- Critically examine and evaluate scientific observation, hypothesis or model construction.
- Articulate a variety of issues created by the complex interactions among science, technology, and society.
- Use scientific perspectives to evaluate contemporary problems facing society.

and more specifically

- Define and understand the types of intermolecular forces present in inorganic and simple organic molecules; describe and predict the intermolecular forces for a particular compound; predict the effects of such forces on the physical and chemical properties of the compound.
- Perform quantitative analysis of the colligative effects of a solute in a solution, including effects on boiling point, melting point and osmotic pressure.
- Describe the variables which affect the rate of a chemical reaction; use experimental data to determine a rate law; use rate laws to calculate the relationship between concentration and time for a chemical reaction.
- Define and understand the equilibrium constant for a chemical reaction, and the related concepts of LeChatlier's Principle and Equilibrium shift. Use experimental data to calculate values for an equilibrium constant and equilibrium concentrations.

- Use the pH scale and pH relationships to determine hydrogen ion concentrations, hydroxide ion concentrations, pH or pOH for a solution, based on experimental data; perform buffer calculations for acid/base mixtures.
- Use the appropriate equilibrium constants to determine solubility and/or precipitation point of an inorganic solute, in water or a solution.
- Describe the thermodynamic variables of enthalpy change, entropy change and Gibbs' free energy change, and how they affect the spontaneity of a chemical reaction; predict the spontaneity of a reaction using the appropriate thermodynamic data.
- Define and describe the types of electrochemical cells, and their individual components; predict the potential of an electrochemical cell under standard and non-standard conditions; use the quantitative relationship between current, charge and time to perform calculations.
- Define and describe the processes of nuclear fusion and fission, predict the products of a nuclear decay and calculate the nuclear binding energy.

#### Grading Assignments:

Homework; quizzes; worksheets; participation assignments; chemistry concept surveys; examinations; final examination; liberal studies assignment

### **LIBERAL STUDIES STATEMENTS**

This course has been approved to meet FSU's Liberal Studies Natural Sciences requirement and helps you become an effective interpreter of scientific results and a critical analyst of claims about the natural world.

By the end of this course, students will:

1. Pose questions or hypotheses based on scientific principles.
2. Use appropriate scientific methods and evidence to evaluate claims or theoretical arguments about the natural world.
3. Analyze and interpret research results using appropriate methods.

### **UNIVERSITY ATTENDANCE POLICY**

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

### **ACADEMIC HONOR POLICY**

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those

expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://fda.fsu.edu/Academics/Academic-Honor-Policy>)

## **AMERICANS WITH DISABILITIES ACT**

Florida State University (FSU) values diversity and inclusion; we are committed to a climate of mutual respect and full participation. Our goal is to create learning environments that are usable, equitable, inclusive, and welcoming. FSU is committed to providing reasonable accommodations for all persons with disabilities in a manner that is consistent with academic standards of the course while empowering the student to meet integral requirements of the course.

To receive academic accommodations, a student:

(1) must register with and provide documentation to the Office of Accessibility Services (OAS); (2) must provide a letter from OAS to the instructor indicating the need for accommodation and what type; and, (3) should communicate with the instructor, as needed, to discuss recommended accommodations. A request for a meeting may be initiated by the student or the instructor.

Please note that instructors are not allowed to provide classroom accommodations to a student until appropriate verification from the Office of Accessibility Services has been provided.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the Office of Accessibility Services

874 Traditions Way

108 Student Services Building

Florida State University, Tallahassee, FL 32306-4167

(850) 644-9566 (voice) (850) 644-8504 (TDD)

[oas@fsu.edu](mailto:oas@fsu.edu)

<https://dsst.fsu.edu/oas>

## **ACADEMIC SUCCESS**

Your academic success is a top priority for Florida State University. University resources to help you succeed include tutoring centers, computer labs, counseling and health services, and services for designated groups, such as veterans and students with disabilities. The following information is not exhaustive, so please check with your advisor or the Dean of Students office to learn more.

## **CONFIDENTIAL CAMPUS RESOURCES**

Various centers and programs are available to assist students with navigating stressors that might impact academic success. These include the following:

Victim Advocate Program

University Center A, Room 4100  
(850) 644-7161 Available 24/7/365

Office Hours: M-F 8-5

<https://dsst.fsu.edu/vap>

Counseling & Psychological Services

Askew Student Life Center, 2nd Floor

942 Learning Way

(850) 644-8255

<https://counseling.fsu.edu/>

University Health Services

Health and Wellness Center

(850) 644-6230

<https://uhs.fsu.edu>