



蘇州大學
Soochow University

CHM 111 General Chemistry II

Winter 2024

Course Credits: 4

Contact Hours: 56 hours

Instructor: TBA

Email: TBA

COURSE OBJECTIVES

A continuation of General Chemistry I. This course covers advanced chemical principles including intermolecular forces, acids and bases, kinetics, equilibrium, thermodynamics, electrochemistry and nuclear chemistry. Upon completion, students should be able to demonstrate an understanding of chemical concepts as needed to pursue further study in chemistry and related professional fields.

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

1. Demonstrate a deep understanding of solutions and their properties, including solubility, colligative properties, and factors affecting solubility;
2. Understand the principles of oxidation-reduction reactions and electrochemistry, including redox reactions, electrochemical cells, and the calculation of cell potentials;
3. Analyze and interpret chemical kinetics, including reaction rates, rate laws, reaction mechanisms, and the effect of temperature and catalysts on reaction rates;
4. Demonstrate a comprehensive understanding of the descriptive chemistry of metals and nonmetals, including their physical and chemical properties, reactions, and trends in the periodic table.

PREREQUISITES

CHM 109 General Chemistry I

GRADING



Grades will be determined by accumulating points, with 100 points being the maximum, as follows:

ITEM	POINTS
Quizzes	20 Points
5 Labs and Reports	45 Points
Midterm	15 Points
Final Exam	20 Points
Total	100 Points

Late submissions will be graded at the end of the course. Grades will be assigned according to the following rule:

$$A \geq 90 > B \geq 80 > C \geq 70 > D \geq 60 > F.$$

We reserve the right to make adjustments to the overall grading policy.

COURSE MATERIALS

Required Texts:

General Chemistry: The Essential Concepts by Raymond Chang, 5th Edition, The McGraw-Hill Companies, Inc. Press, 2008.

Recommended (Optional) Texts or Other Materials:

None

COURSE TOPICS

MODULE	TASKS
Module 1	Topics: Topic 1: Review: general chemistry I Topic 2: Chemical kinetics Topic 3: Homogeneous and heterogeneous equilibria Topic 4: Relationship between chemical equilibria and chemical kinetics Assessments: Lab #1 and Report



Module 2	Topics: Topic 5: Acidic and basic solutions Topic 6: Bronsted-Lowry and Lewis theory of acids and bases Topic 7: Solubility equilibria and the solubility constant Topic 8: Qualitative analysis for metals and nonmetals Assessments: Lab #2 and Report Quiz 1
Module 3	Topics: Topic 9: Chemical thermodynamics Topic 10: Entropy and the Second Law of thermodynamics Topic 11: Gibbs free energy Topic 12: Midterm review Assessments: Lab #3 and Report Midterm#1
Module 4	Topics: Topic 13: Electrochemistry Topic 14: Galvanic and voltaic cells Topic 15: Nuclear chemistry Topic 16: Spontaneous radioactivity and transmutation Assessments: Lab #4 and Report Quiz 2
Module 5	Topics: Topic 17: Transition metal oxidation states Topic 18: Magnetism in transition metals Topic 19: Electrical/heat conduction in metals Topic 20: Organic and biochemistry Assessments: Lab #5 and Report Final Exam

ATTENDANCE

1) Class attendance is required. Missing classes without permission will lead to decrease in overall grade.

Missing less than two classes: no penalty.

Missing more than two classes: 7% will be taken off from the overall grade.

If the instructor reports a student's frequent missing of class to the Soochow



University Academic Administration Office, the student might get a written warning and might be prohibited from attending final exam.

2) Participants in this course are expected to arrive in class promptly and adequately prepared. The primary objective of this course is to critically engage with the readings and the subject matter. Therefore, course participants are expected to have completed the reading prior to class and prepare thoughtful reflections/commentaries to share with fellow colleagues.

LEARNING REQUIREMENTS

- 1) Late assignments are not acceptable and are subjected to grade deductions.
- 2) Assignments submitted in the wrong format will be counted as not submitted.
- 3) Failure to submit or fulfill any required course component results in failure of the class.
- 4) Make-up for midterm and final exams only with valid excuses, as defined by the University.
- 5) In order to earn a Certificate of Completion, participants must thoughtfully complete all assignments by stated deadlines and earn an average quiz score of 50% or greater.

TECHNOLOGY POLICY

The use of electronic devices in class is distracting, both for the user and for the rest of the class. Only non-programmable calculators can be used in the tests and exam. Any attempts to use cell phones and other electronic communication devices will be seemed as cheating. Laptops are discouraged, unless you use them for activities DIRECTLY related to the course (e.g., note taking, reading course documents).

ACADEMIC INTEGRITY POLICY

Soochow University highly values the academic integrity and aims to promote the academic fairness, honesty and responsibility. Any academic dishonesty behaviors and any attempts to cheats and plagiarism will be reported to the university administration office. A written warning and the relevant penalties will be imposed. The record might be shown on the official university transcript.



蘇州大學
Soochow University

DISABILITY ACCOMMODATION

Soochow University is committed to maintaining a barrier-free environment so that students with disabilities can fully access programs, courses, services, and activities at Soochow University. Students with disabilities who require accommodations for access to and/or participation in this course are welcome.

Note:

Please contact the University Administrative Office immediately if you have a learning disability, a medical issue, or any other type of problem that prevents professors from seeing you have learned the course material.