

CHM352: Physical Chemistry I

Text: *Physical Chemistry* (Thermodynamics, Structure, and Change)
Peter Atkins, Julio de Paula,
10th Edition, W.H. Freeman

Lecture: 3 hrs / week

Office Hours:

Course Description and Learning Goals:

Students in this course will learn physical chemistry with macroscopic scale in Physical Chemistry I. Thermodynamics consists of laws based on observation by human (i.e., macroscopic). It is less complex but powerful to explain a variety of phenomena in biological systems, materials, and environment. Concrete understanding of 0th, 1st, 2nd, and 3rd laws of thermodynamics with historical background will be offered. A competency in algebra including the use of exponents and logarithms is expected.

Students Centered learning Goals

- Students will gain mastery and understanding of the principles of chemical thermodynamics and kinetics
- Students will be able to apply thermodynamics and kinetics principles to critically analyze/assess chemical equilibria, electrochemistry, phase transitions, and reaction rates
- Students will be proficient in using the mathematical tools, especially calculus, to solve chemical thermodynamics and kinetics problems

Long-Range Learning Goals: At the end of this course, students should have a solid understanding of the basic principles and techniques of classical thermodynamics, statistical thermodynamics, and kinetics, which students should be able to apply in future studies and in your career in science or a related field. Students should be able to apply their knowledge of thermodynamics/kinetics to physical transformations, chemical reactions, phase and chemical equilibria, and solutions. Students should have an enhanced ability to use mathematics, particularly calculus, as a tool to solve complex chemical and physical problems, starting from first principles. Students should have an enhanced analytical reasoning and problem-solving skills.

Assessments of Learning Outcomes

Quizzes and Exams:

Quiz will be given every fourth lecture to practice solving problems. Each quiz counts about 20 pts. Two mid-term exams, and one final exam will be given in class. Mid-term will be 75 minutes, and final exam will be three hours.

The student is expected to take quizzes and exams at the scheduled time within the entire class.

Please bring your calculator at any quizzes and exams.

There are no makeups for exams (Departmental Policy). Exams will be regraded only if the original paper was written in indelible ink and a written request is submitted, indicating the problem and the reason for the re-grade within three days of the return of the exam.

The schedule, the testing procedure, and the grading basis may be modified and announced during the semester.

Grading:

Your grade will be calculated on the basis of a percentage of total points. Every exam is 100 points, and final exam is 200 points. Quiz is 20 points each.

Projected Grade Lines

A	100% - 90%
B	89% - 80%
C	79% - 70%
D	69%- 60%
F	0% - 59%

Academic Dishonesty:

Cheating will be punished as severely as allowed under University guideline.