

PHYSICAL CHEMISTRY—CHEM 402
Winter Quarter, 2010

Instructor: Dr. Scott Nickolaisen
Office: PS 820
Phone: (323) 343-2382
Office hours: M,W: 10:30 a.m. – 12:00 p.m.
 T: 1:00 – 2:30 p.m.
Class hours: M,W,F: 8:30 – 9:40 a.m., PS 306
Text: *Physical Chemistry, 8th edition* P. Atkins & J. DePaula

Physical chemistry is a study of thermodynamics, kinetics, quantum mechanics, and spectroscopy. In physical chemistry, we attempt to understand chemical phenomena based on our knowledge of the fundamental principles of physics and chemistry. Students should have completed the prerequisites for this course which include the first quarter of Physical Chemistry (Chem 401), General Physics (calculus-based), Calculus, and Multi-Variable Calculus. The second quarter of the Physical Chemistry series completes the discussion of thermodynamics with an examination of systems in equilibrium. The course then will cover the kinetic theory of gases, reaction kinetics including reaction mechanisms and reaction dynamics, and reactions occurring on surfaces. The course consists of lectures, problem sets, and exams. Students will be most successful if they read the text prior to attending lectures, complete problem sets, and attend office hours for clarification of questions.

The following chapters of the textbook will be covered during the Fall Quarter:

- Chapter 7: Chemical Equilibrium
- Chapter 21: Molecules in Motion
- Chapter 22: The Rates of Chemical Reactions
- Chapter 23: The Kinetics of Complex Reactions
- Chapter 24: Molecular Reaction Dynamics
- Chapter 25: Processes at Solid Surfaces

Grading

Grading will be based on performance on homework sets for each chapter and three exams.

Homework Sets. A set of homework problems will be given for each chapter. Due dates for each homework set will be given in class. *Late homework will be accepted for half credit.* Homework will be graded for completion and accuracy. Each problem set will be worth 20 points.

Problem Sets

- Chapter 7: 2, 4, 8, 16, 17, 18
- Chapter 21: 2, 6, 18, 23, 26
- Chapter 22: 2, 4, 8, 10, 16, 18, 20, 26
- Chapter 23: 2, 4, 5, 8, 12, 20, 34
- Chapter 24: 2, 4, 9, 10, 11, 23
- Chapter 25: 2, 4, 5, 6, 8, 10, 12

Exams. The first two mid-term exams will be worth 100 points each. These exams will not be comprehensive, but rather cover course material presented since the previous exam. However, Physical Chemistry is comprehensive in nature, and understanding the previous topics is necessary to understand the current material. The final exam will be worth 150 points and will be comprehensive, covering all topics presented during the quarter.

Exam dates

Midterm #1	4 th week of class
Midterm #2	7 th week of class
Final Exam	Monday, March 15, 2010, 8:00 a.m.

There are a total of 470 points possible for the quarter. Grades will be assigned based on the following scale:

- A: 85% - 100%
- B: 70% - 84%
- C: 60% - 69%
- D: 50% - 59%
- F: < 50%

Plus/minus grading will not be used in this course.

Other Information

Class will not be held on the following dates due to holidays or furlough days:

- Friday, Jan. 15
- Monday, Jan. 18
- Friday, Feb. 19

Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation.

Students are encouraged to review the University's policy on academic honesty in Appendix D of the University Catalog.