

PHYSICAL CHEMISTRY—CHEM 402
Winter Quarter, 2009

Instructor: Dr. Scott Nickolaisen
Office: PS 820
Phone: (323) 343-2382
Office hours: M: 11:00 a.m. – 12:00 p.m.
 T,Th: 1:00 – 2:30 p.m.
 W: 9:30 – 11:00 a.m.
Class hours: M,T,W,Th 8:00 – 8:50 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. Problems will be posted on the Chemistry Department's website under the **Class Notes** tab. Due dates for each homework set will be given in class. *Late homework will not be accepted under any circumstances.* 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. Each exam will be worth 100 points. 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. Additionally, on the last day of lecture, an assessment exam will be administered. This exam consists of multiple choice questions from exams that are given to a national audience. The assessment exam is required—if you do not take this exam, you will receive a zero for one of your midterms. If your score on the assessment exam is higher than any of your other exams score, it will replace that score when I calculate final grades.

Exam dates

Midterm #1	Wednesday, Jan. 28, 2007
Midterm #2	Wednesday, Feb. 18, 2007
Assessment Exam	Wednesday, Mar. 11, 2007
Final Exam	Monday, Mar. 16, 2009, 8:00 a.m.

There are a total of 420 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.