

Chemistry 440G, Fall 2011

Introductory Physical Chemistry

Instructor: Prof. Beth Guiton

Any changes to the schedule will be announced in class.

Contact Details (feel free to contact me!)

Office: CP-148C

Office phone: 859-257-4215

Email: beth.guiton@uky.edu

Office hours: Monday 5:00pm – 6:00pm & Friday 10:00am – 12:00pm

Course Details

Class hours: Monday, Wednesday, and Friday 9:00am – 9:50am & Monday 4:00pm – 4:50pm

Room: CP-111

Required course texts:

1. *Physical Chemistry*, 9th Edition, by Atkins & De Paula.

Also available as an e-book from <http://ebooks.bfwpub.com/pchem9e.php> and http://www.coursesmart.com/9781429257459?_instructor=2791872

2. *Student Solutions Manual to accompany Physical Chemistry*, 9th Edition, by Trapp, Cady, & Giunta.

Companion website: <http://bcs.whfreeman.com/pchem9e> (contains study aids such as living graphs).

Class webpage: http://www.chem.uky.edu/research/guiton/che440g_F11.php

Course description (as described by the office of the registrar): An introduction to the laws of thermodynamics, the thermo-dynamic functions and their application to phase equilibria, chemical equilibria, solutions and electrochemistry. Chemical kinetics, including rate laws, reaction mechanisms, Arrhenius, collision, and activated complex theories, and catalysis. Quantum theory including an

elementary introduction to spectroscopy. The fourth hour to be devoted to problem solving and problem-solving techniques.

Prerequisites: MA 114; PHY 213 or PHY 232; CHE 226 or MA 213

Course Description

Notes: Copies of my (hand-written) notes for this class will be made available on the class webpage ahead of time, so that you can print and bring them to class if you wish to. Please try to print double-sided.

Homework: Homework will be assigned on Wednesdays, and collected at the start of class on the following Wednesday. A folder will be placed on my office door (CP-148C) to collect the homework due on 11/23/11. Late homework will not be accepted unless prior permission is granted. You are encouraged to work with others, but the work you turn in must be your own. No credit will be given to problem solutions copied from the solution manual.

Homework grade: For each problem, one of the following the scores will be assigned: 0, 3, 5 and 10.

- 10: correct approach, right formula and computation, correct answer.
- 5: correct approach, incorrect answer.
- 3: incorrect approach, incorrect answer, but ALL of the following three elements present: (1) List of related formula; (2) at least one computation; (3) at least 20 words.
- 0: all other answers.

Examinations: Three examinations will be given on the dates shown in the schedule. Exams will encompass all class work up to that point, but will focus most strongly on material not yet examined.

Grading:	Two Midterms	40%
	Final Exam	40%
	Homework	20%

Tentative plans for grade assignments:

Final Average	Course Grade
85 - 100	A
75 - 84.9	B
65 - 74.9	C
55 - 64.9	D
Below 55	E

Graduate Student Grading: A grade of D cannot be awarded to graduate students. Therefore, graduate students whose course averages are in the D range will receive E grades. Because the University requires that graduate and undergraduate students be treated differently, graduate students enrolled in this course will have an additional assignment. This assignment will be an essay of 3-4 pages summarizing the course material and relating it to the student's research interest. The essay must be handed to me by Friday December 9, 2010, and the essay grade will account for 50% of the homework grade (ie. 10% of total).

Attendance: Attendance will be taken using a sign-in sheet at the beginning of each class.

Course Content

- 1 Properties of Gases (Atkins Ch 1)
- 2 The First Law of Thermodynamics (Atkins Ch 2)
- 3 The Second Law of Thermodynamics (Atkins Ch 3)
- 4 Phase Equilibria (Atkins Ch 4 & 5)
- 5 Chemical Equilibria (Atkins Ch 6)
- 6 Kinetics of Chemical Reactions (Atkins Ch 21)
- 7 Collision Theory and Transition State Theory (Atkins Ch 22 & 23)
- 8 Introduction to Quantum Theory (Atkins Ch 7)
- 9 Applications of Quantum Theory (Atkins Ch 8)
- 10 Atomic Structure and Spectra (Atkins Ch 9)
- 11 Molecular Spectroscopy (Atkins Ch 12 & 13)

Schedule

Labor Day holiday:	Monday September 5
Examination 1:	Wednesday October 5, 9:00 – 9:50am
Examination 2:	Wednesday November 9, 9:00 – 9:50am
Thanksgiving holiday:	November 23-25
Last Assignment Due:	Wednesday December 7
Last Day of Classes:	Friday December 9
Final Examination:	Wednesday December 14, 8:00 – 10:00am

Academic Integrity

Homework should be viewed as original pieces of work to convey that you understand the rationale for solving the problems. You may confer with others on various techniques and ask for help, but it is up to you to illustrate your understanding. Verbatim copying of someone else's homework will not be tolerated. The minimum penalty for cheating on this course is a grade of E.

Excused absences

An excused absence must be documented in writing. Excused absences from exams or quizzes should be given to me (the instructor) prior to the exam or quiz. A make-up exam or quiz will be given to the student within a few days of the missed exam or quiz. The University allows excused absences for the following:

- Illness of the student or serious illness of a member of the student's immediate family.
- The death of a member of the student's immediate family.
- Trips for members of student organizations sponsored by an academic unit, trips for university classes, and trips for participation in intercollegiate athletic events.
- Major religious holidays. This must be notified to the instructor no later than the last day for adding classes.
- Any other circumstance which the instructor finds reasonable cause for nonattendance.

Course evaluations

Course evaluations are an important component of the Department's instructional program. Time will be allotted during class towards the end of the semester to complete the evaluation of the course and the instructor.

Letter of Accommodation

If you have a documented disability that requires academic accommodations, please see me as soon as possible during scheduled office hours. In order to receive accommodations in this course, you must provide me with a **Letter of Accommodation** from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, jkarnes@uky.edu) for coordination of campus disability services available to students with disabilities.