

CHEM 323: Physical Chemistry I
Abridged Syllabus
Fall 2008

Instructor

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Office Hours

As posted, by appointment or whenever my door is open.

Lecture

Monday, Wednesday, Friday, 09:30 – 10:20, Magruder 2050

Required Materials

Textbook Atkins, P. and de Paula, J. *Physical Chemistry, 8th Ed.*; Freeman: New York, 2006.
A companion solutions manual and survival guide are available and are recommended.

Please see my general syllabus (<http://www2.truman.edu/~jmccormi/GeneralSyllabus.htm>) for more required materials.

A course web page (<http://www2.truman.edu/~jmccormi/P-Chem1/PChem1.htm>) is available (not on the CourseInfo system). There you will find all class information and useful links. The textbook publisher has a web page to accompany the text at <http://bcs.whfreeman.com/pchem8e/>.

Course Objectives

At the end of this semester students will be able to 1) understand that chemistry is a physical science and that the general rules learned in previous courses are based on experimental results and a mathematical treatment of data; 2) apply the precise language and methods of physical chemistry by writing mathematical descriptions of microscopic models of the physical world and relating these to macroscopic phenomena in standard ways; 3) understand the limitations of mathematical models that describe the physical world, why these limitations come about and how this restricts where the models can be applied; and 4) begin to appreciate the broader implications of physical chemistry beyond chemistry.

The primary focus of this course will be the traditional areas of physical chemistry (thermodynamics, equilibrium and kinetics), with other topics covered as time and interest permit. It is assumed that you have a basic understanding of these topics from previous chemistry courses, especially CHEM 120/121. It is also assumed that you have a good knowledge of calculus. For a more detailed description of what you should know from previous courses, please see chemlab.truman.edu/ReviewFiles/PChemReview.htm.

Course Requirements

My expectations of my students (and myself) are that they will work hard, with no shortcuts and no excuses, and that they will come early and be prepared to fully participate in the class.

The information given below is specific to this course. Please see my general syllabus (<http://www2.truman.edu/~jmccormi/GeneralSyllabus.htm>) for information on my policies.

Chapters Covered in the Text You are expected to gain an understanding of, and be able to apply the material in chapters 1–7 and 21–24 (probably not all of 21 and 24). See the table below for the correspondence between chapters in the 7th and 8th editions of the text.

Chapter in 8 th Edition	Chapter(s) in 7 th Edition
1	1
2	2, 3
3	4, 5
4	6
5	7
6	8
7	9, 10
21	24
22	25
23	26
24	27, 29

Exams There will be three exams, each having three parts: take-home, in-class and post-exam. Please see the Course Calendar for the tentative dates and please note these dates are subject to change.

No later than a week before an exam, the take-home portion will be distributed and it will be due at the time of the in-class exam. This part of the exam will consist of approximately five questions that will include questions that expand on the material covered and connect topics. These questions will require more thought and effort than can be accommodated in a one-hour exam, and you should plan accordingly. You may use the book and other resources as needed, but you may not collaborate with any other student on working these problems. You are permitted to ask other faculty members and students for general help on a topic, but not on a specific question from the exercise.

The in-class portion of each exam will focus on specific computational skills and will call on you to explain concepts. There will be approximately seven questions, each with multiple parts. The computational questions will be draw heavily upon quiz questions and problems from the book.

The post-exam portion will generally be available immediately following the exam (this may change if people take the exam late). It will consist primarily of questions from the in-class portion of the exam, but additional questions may be added, at my discretion. Note

that a question may differ slightly between the in-class exam and the post-exam. So, take care how you answer a question! For this portion of the exam, you will write only your answers on the provided answer sheet and attach your work to this sheet. There will be minimal partial credit, so check that your answers have the correct units and significant figures. As with the take-home portion, you may use whatever resources you need, but you may not collaborate with any other student, or ask faculty for help on a specific question. The points awarded in the post-exam section will depend on how many questions you answered correctly and your score on the in-class portion.

Final Exam The final will be given on Tuesday, December 9 in Magruder 2050 from 09:30-11:20. An ACS standardized exam will form the nucleus of the final and it may be supplemented by additional questions.

Quizzes A 10-point quiz will be given in the last 20 minutes of class on Friday, except when there is an exam, or where otherwise noted in the syllabus or announced. The quiz problems will be taken primarily from the chapter under discussion, but they may include older material and they may not require a numerical solution. A week before a quiz you will be given a number of questions (either from the textbook or my own) that may appear on the quiz exactly as given, or in a modified form. The first quiz will be September 5.

Homework It is expected that you will work all of the end-of-chapter problems, not just the ones announced as possibly being on a quiz. Answers for the odd-numbered “Problems” and part *b* of the “Exercises” are in the back of the book and are worked out in the optional student solutions manual. The quizzes and the in-class exams will draw heavily from these problems and exercises.

Grading

Grades will be determined using the following rubrics.

<u>Source</u>	<u>Points</u>
Exams (3 @ 200 points)	600
Quizzes (average score x 20, lowest dropped)	200
Final Exam (%-tile score + 100)	200
Total	1000

<u>Grade</u>	<u>Total Points Earned</u>
A	> 900
B	800 – 899
C	700 – 799
D	600 – 699
F	< 600

If the class average is significantly lower than 700 (very unlikely), the grading scale may be adjusted. However, the grading scale will never be raised. As this is an advanced major’s

course, I expect that most people will earn an A or a B in the class. However, I will use the entire the grading scale. A student whose grade is below a cut-off by 20 points or less will be considered for the next higher grade. The criteria for promotion include final exam score, a student's class participation, a general increase in quiz and/or exam grades over the semester, and attitude (in that order).

Course Calendar

Date	Chapters Covered	Class Events
8/25 – 8/29	1	
9/1 – 9/5	2	
9/1		No class, Labor Day
9/8 – 9/12	2, 3	
9/15 – 9/19	3	
9/22 – 9/26	4	
9/26		Exam 1, chapters 1–3
9/29 – 10/3	4, 5	
10/6 – 10/10	5, 6	
10/9 – 10/10		No class, Fall Break
10/13 – 10/17	6	
10/20 – 10/24	7	
10/27 – 10/31	21	
10/31		Exam 2, chapters 4–7
11/3 – 11/7	21, 22	
11/10 – 11/14	22	
11/17- 11/21	23, 24	
11/24 – 11/28		
11/16 – 11/28		No class, Thanksgiving Break
12/1 – 12/5	24	
12/5		Exam 3, chapters 21–24
12/8 – 12/12		Finals Week
12/9		Final Exam, 09:30-11:20, MG 2050
12/10		Reading Day

This schedule is tentative and is subject to change. If I finish a particular topic early, I will proceed to the next. Be sure you keep ahead of me in your reading. If you have a question, ask!