

Chemistry 648: Physical Chemistry II
Spring 2008
9:30 - 10:45 am, T-R
2049 Malott Hall

Professor:	Ward H. Thompson, 6079 Malott Hall Phone: 864-3980 Email: wthompson@ku.edu																
Office Hours:	Tuesday & Thursday 11:00 am-12:00 pm, or by appointment																
Discussion Section:	Monday, 5:30 - 6:30 pm, 2007 Malott Hall <i>Attendance is mandatory</i>																
Course Website:	A course website is available on Blackboard. Assignments and solutions sets will be posted on this website.																
Final Exam:	Friday, May 16, 7:30 - 10:00 am																
Textbooks:	<i>Physical Chemistry: A Molecular Approach</i> by Donald A. McQuarrie and John D. Simon																
Prerequisites:	CHEM 646, PHSX 211 & 212, MATH 121 & 122, and concurrent enrollment in MATH 223 or consent of instructor.																
Grading:	<table><tr><td>Three In-Class Exams (100 pts each)</td><td>300 pts</td></tr><tr><td>Problem Sets</td><td>200 pts</td></tr><tr><td>Discussion Sec. Attendance</td><td>50 pts</td></tr><tr><td>Discussion Sec. Problems</td><td>100 pts</td></tr><tr><td>“Cool P-Chem Thing of the Week”</td><td>25 pts</td></tr><tr><td>Final Exam</td><td>200 pts</td></tr><tr><td colspan="2"><hr/></td></tr><tr><td>Total</td><td>875 pts</td></tr></table>	Three In-Class Exams (100 pts each)	300 pts	Problem Sets	200 pts	Discussion Sec. Attendance	50 pts	Discussion Sec. Problems	100 pts	“Cool P-Chem Thing of the Week”	25 pts	Final Exam	200 pts	<hr/>		Total	875 pts
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Problem Sets: The best way to learn physical chemistry is to work problems. Solving problems will help you to understand the important concepts and to master the relevant mathematical tools. Problem sets will be regularly assigned and collected. At least one of the problems (selected at random) will be graded for correctness with the remainder credited for completeness. While you are encouraged to talk with each other about the problems, **the work you turn in must be your own** (see “Academic Misconduct” below).

Discussion Sections: In the discussion you will have the chance to work individually and in groups on problem solving skills, mathematical background, and problem solutions. The discussions will complement the material presented in the lectures and will improve your understanding of the physical concepts and ability to work problems. (They are not intended as simply an opportunity to work on assigned problem sets.) Over the course of the semester, some discussions will involve working problems individually or in a group; these will be graded.

“Cool P-Chem Thing of the Week” Each Tuesday during the semester, a student will give an informal (\sim 3-5 min.) presentation on the “Cool P-Chem Thing of the Week.” That is, he/she will discuss a story in the popular media (not the scientific literature) that relates to physical chemistry. The presentation should include a description of the story, its relationship to physical chemistry, and why he/she found it interesting. Each student will give one such presentation over the course of the semester (if there is an exam on Tuesday the presentation will be on Thursday of that week).

Make-Up Exams: No make-up exams will be given. Please notify me as soon as possible if you are unable to attend an exam.

Academic Misconduct: Any incident of academic misconduct in this course will be treated with the utmost seriousness. *All* students involved will receive a zero for the assignment in question **and** be prosecuted to the fullest extent possible according to the procedures outlined in the KU Student Handbook (<http://www.studenthandbook.ku.edu>).

Reading: While the lectures will not directly follow the presentation of the material in the assigned textbook, it is recommended that you read the textbook chapter or chapters relevant to a given topic prior to the first lecture on that material. You should also take advantage of the “Mathchapters” in the textbook in order to review the underlying mathematics required to fully understand the material and complete the problems.

Classroom Decorum: You are *highly* encouraged to ask questions at anytime during class. It will help clarify material for you and your fellow students while also helping me to provide better instruction. Note that while attending the lectures will hopefully improve your understanding of the material and performance in the course, attendance is not mandatory. Thus, talking with friends, reading the newspaper, completing homework, listening to electronic devices, and other disruptive activities should be carried on *outside of class*.

Disabilities: Any student in this course who has a disability that may prevent him/her from fully demonstrating his/her abilities should contact me personally as soon as possible to discuss accommodations necessary to ensure full participation in the educational opportunity. Note that the Academic Achievement & Access Center Disability Resources (www.disability.ku.edu) can assist students with any needs they may have.

Resource Books: The following books may be helpful in learning the material covered in the course:

- P.W. Atkins and R.S. Friedman, *Molecular Quantum Mechanics*
- Peter A. Rock, *Chemical Thermodynamics*
- Richard P. Feynman, *Feynman Lectures on Physics, Vols. I & III*
- Donald A. McQuarrie, *Statistical Mechanics*
- Steinfeld, Francisco, & Hase, *Chemical Kinetics and Dynamics*
- Mary L. Boas, *Mathematical Methods in the Physical Sciences*
- Robert G. Mortimer, *Mathematics for Physical Chemistry*

If requested by a student, these books will be placed on reserve in Anschutz Science Library. There are many other books in the library on Physical Chemistry, Quantum Mechanics, Spectroscopy, Statistical Mechanics, and the other topics covered in this course. You should take full advantage of those resources to learn the material.

Approximate Topic Schedule

Topic	Chapters	Dates	# of Lectures
Brief Review	1-10, 13, 17-18	Jan. 17	1
Real Gases	16	Jan. 22 – Jan. 24	2
First Law of Thermodynamics	19	Jan. 29 – Feb. 7	4
Thermochemistry	19	Feb. 12	1
Exam I		~ Feb. 14	
Second Law of Thermodynamics	20	Feb. 19 – Feb. 26	3
Third Law of Thermodynamics	21	Feb. 28	1
Free Energies	22	Mar. 4 – Mar. 11	3
Exam II		~ Mar. 13	
Phase Equilibria	23	Mar. 25 – Apr. 3	3
Mixtures	24	Apr. 8 – Apr. 10	2
Chemical Equilibria	26	Apr. 15 – Apr. 17	3
Exam III		~ Apr. 22	
Kinetic Theory of Gases	27	Apr. 24 – Apr. 29	2
Reaction Kinetics	28	May 1 – May 6	2
Chemical Dynamics	30	May 8	1
Final Exam		Fri., May. 16, 7:30 - 10:00 am	

Note: The precise exam dates will be announced in class.