

Chem 3620, Physical Chemistry II, Winter 2008
Latest revision is 3/03/08

Class Times: TTh 10:00 – 11:50 am, Olin 103

Instructor: Sandra S. Eaton

Office: Seeley G. Mudd Rm. 178

Office Hours: T Th 1-3 pm, or by appointment

Text: *Physical Chemistry Volume 1: Thermodynamics and Kinetics*, P. Atkins and J. de Paula, 8th ed., Freeman, 2006 (designated as **I**) and

Physical Chemistry Volume 2: Quantum Chemistry, Spectroscopy, and Statistical Thermodynamics, P. Atkins and J. De Paula, 8th ed., Freeman, 2006 (designated as **II**)

OR

Atkins' Physical Chemistry, P. Atkins and J. de Paula, 8th ed., Freeman, 2006 (designated as **B**)

Course Outline

Date	Topic	Reading in Atkins and de Paula	Homework - E and P refer to Exercises and Problems from Atkins and de Paula
Jan. 3	Motion in Gases	I: 241-250 B: 747-756	
8	Motions in Liquids	I: 255-270 B: 761-776	
10	Rates of Reaction	I: 285-297 B: 791-803	I: E8.2a, E8.5a, E8.7a, E8.26a, E8.29a, P8.10 B: same but ch. 21
15	Rate Laws, Temperature Dependence	I: 298-303 B: 804-809	
17	Mechanisms and Rate Laws	I: 303-309 B: 809-815	I: E9.2a, E9.5a, E9.8a, E9.14a, P9.8 B: same but ch. 22
22	Mechanisms (cont.)	I: 309-317 B: 815-823	
24	Complex Reactions	I: 324-332 B: 830-838	I: E9.12a, E9.16a, P9.16, P9.20, P9.24 B: same but ch. 22
29	Collision Theory	I: 363-372 B: 869-878	I: E10.2a, E10.4a, E10.5a B: same but ch. 23
31	Exam 1		
Feb. 5	Symmetry and Point Groups	II: 162-170 B: 404-412	
7	Character Tables, Selection Rules	II: 171-183 B: 413-425	I: E11.4a, E11.5a, E11.8a; II: E5.9a, E5.10a B: same but ch. 24 and 12
12	Electronic Spectroscopy	II: 239-250 B: 481-492	
14	Fluorescence, Phosphorescence	II: 250-261 B: 492-505	II: E5.12a, E5.13a, E7.1a, E7.2a, E7.11a B: same but ch. 12 and 14.

19	Photochemistry	I: 339-346 B: 845-853	
21	Magnetic Resonance	II: 271-291 B: 513-533	II: P7.12, P7.14, P7.18; I: E10.7a, P10.10 B: same but ch. 14 and 23
26	Pulsed NMR	II: 291-301 B: 533-549	II: E8.6a, E8.7a, E8.13a B: same but ch. 15
28	Exam 2		
Mar. 4	Electron Spin Resonance	II: 307-312 B: 549-555	
6	Spin Density and Huckel Theory	II: 144-150 B: 386-392	II: E8.18a, E18.20a, E8.22a, P8.2, P8.10 B: same but ch. 15
11	Final exam – cumulative 9-11 am		

Reading assignments

Reading assignments are intended to prepare you for discussions in class. It is important that you read the material before coming to class and bring your questions with you.

Homework

Homework is very important to the learning process. The best way to understand the material for this class is to work problems. Homework will be assigned weekly, collected, and an answer key provided. The assignments will be added to the version of the course outline that is posted on Blackboard. If you have difficulty working an assigned problem it often is useful to try a similar problem from the end of the chapter for which the worked solution is provided in the student's solution manual which is available in the bookstore. From each homework set one problem will be randomly selected for grading.

Part of the time during each class period will be spent working together on problems. Your contributions to these discussions will be part of your grade.

Grading: Class Participation - 10%, Homework - 15%, Exams - 25% each.