

# Chem 3737: Biophysical Chemistry, Spring 2005

Lecture MWF 12:00 - 12:50, Room 6029 Ward Beecher

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Office hours: MWF 10-11, MW 1-2

**Objective:** This course will focus on the theory and applications of thermodynamics, chemical properties and kinetics as they relate to biological systems. Students should gain familiarity with biological molecules and the properties that contribute to their examination and the methods that take advantage of these specific properties.

**Materials** Text: *Physical Chemistry for the Chemical and Biological Sciences* R. Chang, University Science Books, (2000).

References: *Lehninger Principles of Biochemistry*, Nelson, D.L. and Cox, M.M., W.H. Freeman and Co., (2005)  
*Biophysical Chemistry, Vol. I, II & III*, Cantor, C.R. and Schimmel, P.R., W.H. Freeman and Co., (1980)  
*Physical Chemistry: Principles and Applications in Biological Sciences (3<sup>rd</sup> Edition)*, Tinoco, Jr., I, Sauer, K. and Wang, J.C., Prentice-Hall, Inc. (1985)

Handouts: Other materials will be distributed as needed.

Other: A scientific calculator

**Grading** Exams: There will be two midterm exams given during the semester. Each will be worth **100 points**.

Final A cumulative final will be given at **10:30 am on Friday, May 13**. The final will be worth **200 points**.

Laboratory Laboratories will be factored into the cumulative grade for the semester. Individual laboratory grading will be determined by the laboratory instructor, but cumulative laboratory grade will be assessed by a cumulative total of **100 points**.

Letter Grades: Letter grades will be assigned based on a percentage scale: **A**, 85-100%; **B**, 75-84%; **C**, 65-75%; **D**, 55-64%; **F**, <55%.

**Tentative Course Schedule**

Dates	Topics	Reading	Chapter Problems
Jan 19	Introduction	Ch 1	
Jan 21-26	Gas Laws	Ch 2	1,3,6,8,12,15,21,26,38,43,47
Jan 28-Feb 2	Kinetic Theory of Gases	Ch 3	1,4,6,14,17,24,29,34,35,39
Feb 4-9	First Law of Thermodynamics	Ch 4	5,6,10,12,13,17,22,27,29,31,37
Feb 11-16	Second Law of Thermodynamics	Ch 5	11,13,16,18,30,35
Feb 18	<b>Study Review</b>		
Feb 21	<b>EXAM I</b>		
Feb 23-28	Gibbs and Helmholtz Energies	Ch 6	3,6,12,13,22,25,26
Mar 2-7	Non-electrolyte Solutions	Ch 7	1,2,4,6,7,10,14,15,19,21,22,28,33,39,43,51
Mar 9-11	Electrolyte Solutions	Ch 8	1,6,10,11,14,16,18,20,22
Mar 14-18	<b>Spring Break</b>		
Mar 21	Electrolyte Solutions	Ch 8	1,6,10,11,14,16,18,20,22
Mar 23-28	Chemical Equilibrium	Ch 9	4,5,9,11,15,21,22,26,27,29,33,34
Mar 28-Apr 1	Electrochemistry	Ch 10	1,5,10,17,22,25,28
Apr 4	<b>Study Review</b>		
Apr 6	<b>EXAM III</b>		
Apr 8-13	Acids and Bases	Ch 11	2,5,8,16,18,24,27,30,33,35,41,44,45,53,55
Apr 15-20	Kinetics	Ch 12	2,6,9,12,15,19,22,25,27,33,36,38
Apr 22-27	Enzyme Kinetics	Ch 13	3,6,8,11,18,22
Apr 29-May 2	Liquid State	Ch 21	3,4,11,15,17,19,21,24
May 4-6	Macromolecules	Ch 22	2,4,7,14,15,17,26
May 13	<b>FINAL EXAM 10:30 - 12:30</b>		