

**BIOL 4461/ CHEM 4461: BIOPHYSICAL CHEMISTRY Spring 2006**  
Meets Mon and Fri 9:00-10:45am in GR3.302

<u>Instructor</u>	<u>Office</u>	<u>Office Hours</u>	<u>Email</u>
Don Gray	FO 3.611	M,F 11:00-12:00	dongray@utdallas.edu
Warren Goux	BE3.510	M,F 11:00-12:00	wgoux@utdallas.edu

**Required text:** *Principles of Physical Biochemistry.* van Holde, Johnson, & Ho, Prentice-Hall, Second Edition (2006). ISBN 0-13-046427-9.

**Objectives:** This 4-hour course treats topics at the interface between biochemistry and structural biology. Students are required to have a prior background in calculus, physics, and biochemistry. The objective is to familiarize students with the physical and chemical principles that underlie techniques used to determine and characterize biomolecular structures. The concepts emphasized include classical and statistical thermodynamics, transport processes, chemical bonding, spectroscopy, X-ray diffraction, and NMR.

**Grading:** Four exams. There will be no make-up exams, but the lowest exam score will be dropped. (arrange that your car breaks down only once!). Do not miss the exams as a make-up exam will only be considered in the case of an official university excure.

There will be no changes of exam scores beyond one week after the scores are posted. Homework will be assigned but not graded. Solutions will be discussed in class.

**Grades:** At the end of the semester your scores on the three best exams will be averaged to determine a final letter grade.

**Information via Web from Dr. Goux:** Relevant course material may be posted at <http://blackboard.utdallas.edu>. This material may include solutions to homework and exams. You may log onto the Blackboard site using your UTD assigned net ID and password. If you do not know your UTD NetID, you can retrieve it at <http://netid.utdallas.edu/>. Accessibility information can be found at <http://access.blackboard.com>. Mail sent to you by the instructor will be sent to your university email address. If you wish to use other email addresses, you will need to visit <http://netid.utdallas.edu/> and set up mail forwarding.

**Information via Web from Dr. Gray:** Relevant course material will be posted on WebCT.

**Academic Dishonesty Policy:** Students are required to abide by UT-Dallas policies concerning academic integrity (for details, see <http://www.utdallas.edu/student/slife/scholastic.html>). Failure to comply with these terms will be subject to appropriate disciplinary action.

**Students with Disabilities:** If you have a disability that requires accommodation, you must notify the instructor and file a request through Disability Services (SU 1.610, x2098) on or before the first day of class. By doing so, you can be assured of full cooperation in making appropriate arrangements.

DATE	TOPIC	CHAPTER
Mon, Jan. 9 (DG)	Structure of macromolecules	1
Fri, Jan. 13 (DG)	Structure of macromolecules, continued	1
Mon, Jan. 16	<b>No class - Martin Luther King Holiday</b>	
Fri, Jan. 20 (WG)	Discuss HOMEWORK #1 on Chap 1 Thermodynamic principles	2
Mon, Jan. 23 (WG)	Thermodynamic principles, continued <b>(Wed, Jan 25 - Last day to drop without a "W")</b>	2
Fri, Jan. 27 (WG)	Molecular thermodynamics	3
Mon, Jan. 30 (WG)	Molecular thermodynamics, continued	3
Fri, Feb. 3 (WG)	Molecular thermodynamics, continued Discuss HOMEWORK #2 on Chaps 2 and 3	3
Mon, Feb. 6	<b>EXAM 1: Chapters 1, 2 and 3</b>	
Fri, Feb. 10 (DG)	Statistical thermodynamics	4
Mon, Feb. 13 (DG)	Statistical thermodynamics, continued	4
Fri, Feb. 17 (DG)	Statistical thermodynamics, continued Discuss HOMEWORK #3 on Chap 4	4
Mon, Feb. 20 (WG)	Chemical equilibria,	14
Fri, Feb. 24 (WG)	Chemical equilibria,	14
Mon, Feb. 27 (WG)	Chemical equilibria, continued Discuss HOMEWORK #4 on Chap 14	14
Fri, Mar. 3	<b>EXAM #2: Chapters 4 and 14</b>	
Mon, Mar. 6	<b>No class - Spring Break</b>	
Fri, Mar. 10	<b>No class - Spring Break</b>	
Mon, Mar. 13 (DG)	Diffusion and Electrophoresis	5.1, 5.2 & 5.4
	<b>(Weds Mar. 15 - Midterm grades available; Thurs Mar. 16 - Last day to drop with WP/WF)</b>	
Fri, Mar. 17 (DG)	Structure determination by X-ray crystallography	6
Mon, Mar. 20 (DG)	X-ray diffraction, continued	6
Fri, Mar. 24 (DG)	X-ray diffraction, continued Discuss HOMEWORK #5 on Chaps 5 and 6	6
Mon, Mar. 27 (WG)	Absorption spectroscopy	9

Fri, Mar. 31 (WG)	Absorption spectroscopy, continued Discuss HOMEWORK #6 on Chap 9	9
Mon, Apr. 3	<b>EXAM #3: Chapters 5, 6, and 9</b>	
Fri, Apr. 7 (DG)	Linear and circular dichroism	10
Mon, Apr. 10 (DG)	Emission spectroscopy	11
Fri, Apr. 14 (DG)	Emission spectroscopy, continued Discuss HOMEWORK #7 on Chaps 10 and 11 <b>Last day to drop with signatures</b>	11
Mon, Apr. 17 (WG)	Structure determination by NMR	12
Fri, Apr. 21 (WG)	NMR, continued	12
Mon, Apr. 24 (WG)	NMR, continued Discuss HOMEWORK #8 on Chap 12	12
Fri, Apr. 28	<b>FINAL EXAM: Chapters 10, 11, and 12</b> <b>NOTE: EXAM Time is 8:00 am!!</b>	