Course Information

CHM 6361.001: Physical Biochemistry
Spring 2007
MWF, 1:30 pm to 2:20 pm
CB1.122

Professor Contact Information

Dr. Donovan C. Haines (Course coordinator)
Phone: 972-883-4542
Email: haines@utdallas.edu
Office: BE2.518
Office Hours: M 12:15-1:30 (Listen for possible changes announced in class.)

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Course Pre-requisites, Co-requisites, and/or Other Restrictions

none

Course Description

This course is an introduction to physical biochemistry, including various biophysical methods and a review of several basic biochemistry concepts.

Student Learning Objectives/Outcomes

Objectives: This course is meant to provide the primary overview of the physical aspects of Biochemistry to Chemistry graduate students. Students learn about protein and nucleic acid structure, fundamental metabolism, properties of macromolecules, interactions with electromagnetic radiation, thermodynamics of macromolecular solutions, transport processes, and other topics. As this course is often the student's primary exposure to biology, overviews of recombinant DNA and related techniques for the preparation of macromolecules is also presented.

Outcomes: Students will therefore:

1. Be able to analyze the relationship between structure and function in macromolecules in examples presented to them and use these relationships in the design of novel macromolecules.
2. Be able to discuss and analyze experiments used to study biological macromolecules: including recombinant DNA techniques, probes of enzyme catalysis, kinetics, separation methods, and spectroscopy.
3. Be able to analyze the roles of macromolecules in the more complex contexts of cells and organisms, especially metabolic pathways, and discuss features such as thermodynamics important for their function.

Required Textbooks and Materials

Physical Biochemistry: Principles and Applications
by David Sheehan

Suggested Course Materials

An undergraduate Biochemistry text may prove useful.

Assignments & Academic Calendar

week				
1	M	1/8/2007	Intro	Haines
1	W	1/10/2007	Nucleic Acids	Haines
1	F	1/12/2007	Nucleic Acids	Haines
2	M	1/15/2007	**HOLIDAY**	
2	W	1/17/2007	Protein Structure 1	Dieckmann
2	F	1/19/2007	Protein Structure 2	Dieckmann
3	M	1/22/2007	Protein Structure 3	Dieckmann
3	W	1/24/2007	Post-translation	Dieckmann
3	F	1/26/2007	NMR	Dieckmann
4	M	1/29/2007	X-Ray	Haines
4	W	1/31/2007	Intro to Enzymes and Kinetics	Haines
4	F	2/2/2007	Kinetics and Drug Action 1	Haines
5	M	2/5/2007	Kinetics and Drug Action 2	Haines
5	W	2/7/2007	Enzyme Regulation	Haines
5	F	2/9/2007	Mechanism of Catalysis	Haines
6	M	2/12/2007	(No class)	
6	W	2/14/2007	Vitamins and Cofactors	Haines
6	F	2/16/2007	DNA replication	Haines
7	M	2/19/2007	Transcription	Haines
7	W	2/21/2007	Translation	Haines
7	F	2/23/2007	Molecular Biology 1	Haines
8	M	2/26/2007	Molecular Biology 2	Haines
8	W	2/28/2007	Bioinformatics	Haines
8	F	3/2/2007	Seq->Struct Case Study - Enz of Drug Metabolism	Haines
9	M	3/5/2007	**SPRING BREAK**	
9	W	3/7/2007	**SPRING BREAK**	
9	F	3/9/2007	**SPRING BREAK**	
10	M	3/12/2007	Separation Techniques	Dieckmann
10	W	3/14/2007	Separation Techniques	Dieckmann
10	F	3/16/2007	Separation Techniques	Dieckmann
11	M	3/19/2007	Size determination/assoc	Goux
11	W	3/21/2007	Size determination/assoc	Goux
11	F	3/23/2007	Size determination/assoc	Goux
12	M	3/26/2007	Intro to Spectroscopy	Goux
12	W	3/28/2007	Fluorescence	Goux
12	F	3/30/2007	Circular Dichroism	Goux
13	M	4/2/2007	Circular Dichroism	Goux
13	W	4/4/2007	Lipids	Haines
13	F	4/6/2007	Lipids	Haines
14	M	4/9/2007	Advanced Biophysics of Membranes (tentative)	Nielsen
14	W	4/11/2007	Advanced Biophysics of Membranes (tentative)	Nielsen
14	F	4/13/2007	Advanced Biophysics of Membranes (tentative)	Nielsen
15	M	4/16/2007	Advanced Biophysics of Membranes (tentative)	Nielsen
15	W	4/18/2007	Metabolic and Molecular Imaging	Sherry
15	F	4/20/2007	Metabolic and Molecular Imaging	Sherry
16	M	4/23/2007	Wrapup and Course Review	Haines

EXAMS –There will be two take home exams during the semester.

Exam 1:	Pick up Friday, Feb. 23h
	Turn in Friday, Mar. 2nd
Exam 2:	Pick up Friday, Apr. 20th
	Turn in Friday, April 27h

Both exams must be taken at the scheduled time (there are no make-up exams). Failure to take an exam will result in a "zero" (0). Each student must work alone, not discuss the exam with other students, and turn in their own work.

Grading Policy

Your grade will be determined by the average of your two exam scores according to the following scale:

To get	You must get this percent of the total points
A	90
B	80
C	70
D	60
F	Below 60

Course & Instructor Policies

attendance: your attendance and class participation will have an impact on your final grade. Taking an active role in your learning will (guaranteed) help you perform better.

academic honesty: I assume that students that are at this level need not be reminded of the necessity of doing their own work. I encourage people to study together --you really will learn more. On exams you may not work together. If anyone is found participating in dishonest conduct, they will be dealt with in the normal university policies as outlined in your student handbook. If found guilty, penalties can range from failing the course to university dismissal. Folks, it is not worth it!

Field Trip Policies
Off-campus Instruction and Course Activities

> *Off-campus, out-of-state, and foreign instruction and activities are subject to state law and University policies and procedures regarding travel and risk-related activities. Information regarding these rules and regulations may be found at the website address*

http://www.utdallas.edu/BusinessAffairs/Travel_Risk_Activities.htm. Additional information is available from the office of the school dean. Below is a description of any travel and/or risk-related activity associated with this course.

There is no travel associated with this laboratory course.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures.*

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision

of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of **F**.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions and timelines are subject to change at the discretion of the Professor.