

# CHM 5400: Biological Physical Chemistry

Winter 2012

## Instructors:

Dr. G. Andrés Cisneros

Office: 333 Chemistry

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Dr. H. Bernhard Schlegel

Office: 375 Chemistry

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## Lectures:

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Tuesday, Thursday 4:00 – 5:50 PM.

## Office Hours:

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Thursday 2:00 – 3:00 PM. We will also be available for after class questions/discussions – please, make appointments by asking after class or by e-mail.

## Course Coverage:

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This course illustrates the principles of Biological Physical Chemistry using selected examples from thermodynamics, statistical mechanics, spectroscopy and photophysics. The lectures address the general principles of physical chemistry as applied to biological systems.

## Required Texts:

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R. Chang (2005), *Physical Chemistry for the Biosciences*, 7<sup>th</sup> Ed., University Science Books: Sausalito. ISBN 1-891389-33-5

## Recommended Texts:

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I. Tinoco, K. Sauer, J. Wang and J. Puglisi (2003), *Physical Chemistry, Principles and Applications in Biological Sciences*, 4<sup>th</sup> Ed., Prentice Hall: New Jersey. ISBN 0-13-095943-5-X

## Web-Based Resources:

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**Blackboard** is a web-based resource for courses. The website <http://blackboard.wayne.edu>. Plan to check this site regularly. On the lecture site you will be able to find course announcements and supplementary course materials, as well as other resources. To access Blackboard you need your WSU user id and password.

## Class Sessions:

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Lectures will be used to clarify and work with important topics. You are expected to be prepared on the material to be discussed when you come to class. The best way to prepare for lecture is to read the corresponding chapter ahead of class.

## Exams and Quizzes

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There will be two midterms, a final exam and six quizzes (during class time). **All exams and quizzes will be closed-book.** The primary purpose of the quizzes is to provide an opportunity to assess your learning on a regular basis. The best way to prepare for a quiz is to study the corresponding chapters and problems. You are expected to take each quiz at its scheduled time. **There are no makeup quizzes for any reason.** If you miss a quiz *for any reason*, you will receive a grade of zero for that quiz but the lowest grade quiz will be dropped.

All exam dates are final, permission (with legitimate excuse) must be obtained **at least 24 hrs before** the date and time of the exam.

## Special Provisions:

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If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS). Once you have your accommodations in place, we will be glad to meet with you privately during office hours to discuss your special needs.

## Academic Honesty:

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You are expected abide by the honor code ([http://studentsenate.wayne.edu/news\\_archive.php?id=3164](http://studentsenate.wayne.edu/news_archive.php?id=3164)) at all times. Cheating on course work or any other form of academic dishonesty is abhorrent to the academic process and will not be tolerated. Cheating will result in severe punishment and may lead to expulsion from the University according to the rules of the College of Liberal Arts and Sciences and Wayne State University.

## Withdrawals:

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If you withdraw **on or before Monday, January 23, 2012** the course will not appear on your academic record.

In order to withdraw **on or after Tuesday, January 24, 2012**, you must have your instructor's signature. In this case, the course will appear on your transcript with a mark of WP, WF or WN.

**You may not withdraw from this course after Saturday, March 24, 2012.**

If you stop attending this course without completing the formal withdrawal procedure, you will be assigned the grade you have earned according to the scheme shown below.

## Homework:

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All homework assignments must be turned in on time, the turn in dates are noted in the syllabus (see below).

## Grading:

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Grades will be assessed as follows:

Homework (>80% completed) .....	8
Quizzes (10 pts each) .....	12
Midterm exams (100 pts each) .....	40
Final exam .....	<u>40</u>
	100

**Tentative Schedule:**

	<b>Lectures</b>			<b>Homework</b>	<b>Quiz</b>
Week	Date	Tuesdays	Thursdays	Due Date	Date
1	1/10	Syllabus, course outline, math survey Chapter 1: Introduction	Chapter 2: Properties of gases		1/10
2	1/17	Chapter 2: Properties of gases	Chapter 3: The 1 <sup>st</sup> law	1/19	
3	1/24	Chapter 3: The 1 <sup>st</sup> law of Thermodynamics		1/24	1/26
4	1/31	Chapter 4: The 2 <sup>nd</sup> law	<b>Midterm I</b>	1/31	
5	2/07	Chapter 4: The 2 <sup>nd</sup> law		2/07	2/09
6	2/14	Chapter 9: Chemical Kinetics		2/14	
7	2/21	Chapter 10: Enzyme Kinetics		2/21	2/23
8	2/28	Chapter 11: Quantum Mechanics and Atomic Structure		2/28	
9	3/06	Chapter 11: Quantum Mechanics and Atomic Structure		3/08	3/08
10	3/13	<b>Spring Break</b>		<b>Spring Break</b>	
11	3/20	Chapter 12: The Chemical Bond	<b>Midterm II</b>	3/20	
12	3/27	Chapter 13: Intermolecular Forces		3/27	3/29
13	4/03	Chapter 14: Spectroscopy		4/03	
14	4/10	Chapter 15: Photochemistry and Photobiology		4/10	4/12
15	4/17	Chapter 16: Macromolecules		4/17	
16	4/24	<b>Final Exam (date TBA)</b>			