Course	**CHEM 3321.001**
Professor	Dr. Warren J. Goux, BE 3.510 (office)
TAs	Jenifer Calvo ; jsc150030@utdallas.edu Juan Vizuet ; jpv150030@utdallas.edu
Term	Fall 2016
Meetings	MWF, 8:00 – 8:50 am, SLC 2.303
Help Session	TuW 5:30-7:00 pm Tu JO4.614; W HH2.502

Professor's Contact Information

Office Phone	972-883-2660
Office Location	Berkner Hall (BE), room 3.510
Email Address	wgoux@utdallas.edu
Office Hours	MW 9:00 am – 10:00 am or by appointment. Please contact me by phone or email before coming to see me outside office hours. This insures that I will be available for you.
Help Session	There will be weekly help sessions run following assignment of the first problem set.

General Course Information

Pre-requisites, Co-requisites, & other restrictions	CHEM 2325, PHYS 2325 and MATH 2451, or consent of instructor (CHEM 3361 is recommended). It will be assumed that you have a working knowledge of MS Excel or other equivalent spreadsheet program.
Course Description	Physical Chemistry I is designed to provide students of chemistry and biochemistry with a fundamental understanding of thermodynamics, chemical and phase equilibria, and kinetics.
Learning Outcomes	*Objectives* Fundamental properties of macroscopic biophysical chemical systems are introduced and described in quantitative terms. A core of topics in thermodynamics, molecular motion and kinetics, is supplemented with topics germane to students taking physical chemistry with biophysical applications. *Expected Learning Outcomes* Upon successful completion of this course, students will therefore: 1. Demonstrate the use of the three laws of thermodynamics in calculating chemical and phase equilibria and assessing the spontaneity of chemical processes; 2. Interpret kinetic theory; 3. Explain the rates of chemical reactions and enzyme kinetics in terms of simple models. 4. Demonstrate knowledge of meathematics and physics by applying that knowledge to evaluate mathematical problems related to physical chemistry.
Required or Recommended Texts & Materials	*Physical Chemistry; A Molecular Approach: by D.A. McQuarrie & J.D. Simon, ISBN 0-935702-00-7*

Course Evaluation:

(i) Exams + problem sets + Final exam, best 4 of 5 (4 x 25%)	100%

(i) ***Homework:*** An essential part of learning physical chemistry is getting as much practice as possible applying basic concepts to solving problems. There are 10 homework sets which may be turned in for grading. Problems and solutions will be posted on eLearning. In general problem sets will cover material previously covered in class. Home work is due at the beginning of class on the date posted in the class schedule. Homework turned in after the first 10 min of the class period will not be accepted. The TAs will grade all homework. **Your lowest 2 homework grades will be dropped and will not count towards your homework grade average.**

(ii) ***There will be no makeup exams given***. 3 exams, the homework (best 8/10) and the final exam count equally (25% each), and only four of the 5 assessments are counted towards your final grade. If you turn in all 5 assignments, your lowest grade will be dropped. However, keep in mind that if you decide not to turn in problem sets or opt out of an exam and then are ill or absent, one of your evaluations will receive a zero score.

(iii) ***Exams***. Exam format will vary from exam to exam. The fist 3 exams will be 90 min long (see Exam Venue below) and the final exam will be the university allotted time given for the final exam. Chemistry is a science that requires both memorization and deduction using problem-solving skills. You will be expected to know all of the concepts contained in chapters. You may bring a 3" x 5" card (crib card) to the exam with as many formulas on **one side** as you can fit. You will NOT be expected to memorize tables of data or physical constants (these will be provided). You may not copy excerpts from chapters on your crib card. If you are unclear on whether other information contained in chapters is allowed on your crib card, it is best to ask your instructor

(iv) ***Help Section/Exam Venue***: For the first time ever our course is split into two sections with a scheduled help section each Tu, W 5:30 – 7:00 pm. You will have signed up for one of these two sections. During times where there are no exams these sections will be run by your TAs as help sessions. On weeks there are exams, you must go to the section you are signed up for to take the exam.

Be On Time: It is best to be early to exams. This will give you the opportunity to mentally prepare yourself for the exam. ALL 3 exams will be 90 min long. You may arrive up until the first student finishes his/her exam (grace period), the only penalty being that you will have proportionally less time to finish the exam. After this grace period you will not be allowed to take the exam. Note: There is no way of determining when the first student will finish his/her exam. Some students finish very quickly.

Grading errors: If you feel that an error has been made in grading of your exam you have up until one week after the exam is returned to bring the errors to the attention of the instructor. Errors found after this time will not be considered for more credit.

Lecture/Homework Schedule

Dates for course content are nominal. Exam dates are fixed unless there is a university closing.
Problems will be assigned and solutions posted on eLearning.

Period	Date	Chapter	Description
1	22-Aug		Course organization & introduction
2	24-Aug	16	The microscopic world; ideal gases
3	26-Aug	16	Real Gases
4	29-Aug	16	Law of corresponding states
5	31-Aug	19	First Law of Thermodynamics
6	2-Sep	19	**Hmwk Set 1 Due**
7	7-Sep	19	Internal energy and enthalpy; the mechanics
8	9-Sep	19	**Hmwk Set 2 Due**
	12-Sep	19.1	Thermochemistry
9	14-Sep	-19.12	
10	16-Sep	20.1-20.7	**Hmwk Set 3 Due**:Second Law
11	19-Sep	20.1-20.7	Second Law
12	21-Sep	20.1-20.7	Second Law
13	23-Sep	20.1-20.7	**Hmwk Set 4 Due**; Second Law
14	26-Sep	21.1-21.5	The Third Law
	27-Sep		**EXAM 1**
15	28-Sep	22.1-22.7	Helmholtz and Gibbs Free Energy; **EXAM 1**
16	30-Sep	22.1-22.7	
17	3-Oct	22.1-22.7	
18	5-Oct	22.1-22.7	
19	7-Oct	26.1-26.7	**Hmwk Set 5 Due;** Chemical Equilibrium
20	10-Oct	26.1-26.7	
21	12-Oct	26.1-26.7	:
22	14-Oct	26.1-26.7	Equilibrium Constrants in terms of activities
		26.11	**Hmwk Set 6 Due**
23	17-Oct	23.1-23.4	Phase Equilibria
24	19-Oct	23.1-23.4	The Claperon Equation
25	21-Oct	24.1-24.5	Liquid-Liquid solutons: **Hmwk Set 7 Due**
26	24-Oct	24.1-24.5	Liquid-Liquid solutions
	25-Oct		**EXAM 2**
27	26-Oct	25.1-25.4	Liquid-Solid solutions; **EXAM 2**
28	28-Oct	25.1-25.4	Colligative Properties
29	31-Oct	25.1-25.4	Colligative Properties
30	2-Nov	27	Kinetic Theory of Gases
31	4-Nov	27	**Hmwk Set 8 Due**
32	7-Nov	27	Kinetic Theory of Gases
33	9-Nov	27	Kinetic Theory of Gases
34	11-Nov	28	Chemiical Kinetics; **Hmwk Set 9 Due**
35	14-Nov	28	Chemical Kinetics
36	16-Nov	28	
37	18-Nov	29.1-29.5	Chemical Kinetics II: **Hmwk Set 10 Due**
38	28-Nov	29.1-29.5	
	29-Nov		**EXAM 3**
39	30-Nov	29.1-29.5	Michaelis-Menten kinetics; **EXAM 3**
40	2-Dec	29.11	Michaelis-Menten kinetics
41	5-Dec		Review for Final Exam
42	7-Dec		Review for Final Exam
43	Dec-7-15-Dec		**FINAL EXAM**

Comet Creed:

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures:

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.