CHEM 102 Chemical Reactivity Spring 2011

Danielle Cass
Lead Faculty
Chem 414, x7211
dcass@reed.edu
Office Hours
M 2-4, Th 9:30-10:45

Julie Fry
Faculty – Lab
Chem 318, x7951
fry@reed.edu
Office Hours
M 3-4:30, T 4:30-6

Wendy Breyer
Lab Instructor
Chem 308B, x7893
breyerw@reed.edu
Office Hours
F 2-4

Please feel free to contact us for an appointment if our office hours don't fit your schedule.

Class Meeting Times

Lecture:	VLH	MWF 11:00-11:50am
Conferences:	Chem 105	W: 3:10-4; 4:10-5 Th: 11-11:50; 2:10-3; 3:10-4; 4:10-5
Lab	Chem 308	M-Th: 1:10-4 pm; F: 2:10-5 pm; T: 9-12 am
Lab Lecture	MWF Chem 301 and T/Th Chem 105	

Course Overview

This course is a beginning to understanding both the qualitative AND quantitative aspects of physical chemistry. We will go from understanding molecules to understanding how molecules interact in chemical reactions. The best way to succeed in this class is to attend all the scheduled classes AND plan on working 1-2 hours per lecture on reading and doing practice problems. If you are having difficulties it is best to seek immediate assistance from Danielle, Wendy, or Julie. Additionally, you can seek more help from tutors or the DoJo.

Text

Gilbert, T.R.; Kirss, R.V.; Foster, N.; Davies, G. Chemistry: 2nd Edition; W.W. Norton and Company: New York, 2009.

Moodle

This class will utilize the Reed moodle site (https://moodle.reed.edu/course/view.php?id=759). All information about the class will be available on Moodle. You will also be able to access your weekly problem sets and other assignments via this site.

Course Evaluation

Midterm Exams (3/4 and 4/15) (30%): These will be 50 minute in length to be taken during class with closed books and notes. Please bring a WORKING calculator (not a cell phone) to the exam as well as a pen or pencil. Exams will be based upon material covered in class as well as required reading assignments and problem sets. No makeup exams will be given unless previously discussed with the instructor prior to the exam. Best to do this well in advance of the exam when possible.

Final Exam (Date to be announced, do not plan on leaving campus prior to 5/20/11) (25%): This exam is three hours long and will cover everything since the last midterm as well as a review of the entire semester. Same rules apply as the midterm.

Problem Sets (15%): These are due Wednesdays during class or no later than 1pm to Kathy Kennedy (Chem 303). No late work will be accepted.

Laboratory Reports (25%): These are due one week after the completion of the experiment, on your scheduled lab day. Explicit instructions can be found in your lab manual. There is a 5% penalty per day for late labs and no reports will be accepted 1 week past the due date. ***Note: To pass this class you must pass the laboratory section of the course.***

Participation (5%): Every week you will be expected to attend **and participate in** your conference and lecture. The grade for participation will be based upon your active involvement in both of these. To help me keep track of students' understanding during lecture you will be asked to use Clickers in CHEM 102. This is the same system used during CHEM 101 and therefore most of you should have them already. However, if you lost yours or need a replacement for any reason, new clickers can be purchased through CIS on 1/27, 1/28, 1/31, and 2/1 from 1-4pm in the Technology Center.

ACADEMIC COLLABORATION:

All work submitted during this course is expected to reflect the effort of the individual whose name appears on top of the page.

You are encouraged to work with friends, tutors and instructors on problem sets and lab reports. However, when the time comes to write this work up for submission, it must be your work, written in your own words and reflecting your individual understanding of the problems at hand. Moreover, in the case of lab reports, the write-up must be taken from the data that you collect in lab, unless you receive specific permission from an instructor to use someone else's data.

All exams are to be taken closed book, closed notes and without any collaboration. In using a calculator, you may only use it for arithmetic and for simple algebraic and trigonometric functions. You may not use programmed equations or graphing functions during the exam period.

Schedule

This is a general overview for the semester's schedule. More details, such as exact assignments and readings, can be found on moodle and in your lab manual.

WEEK	LECTURE	LAB
Week 1	Behavior of Gases	Lab Check In
Week 2	Solution Chemistry	Exp 1: Unknown Metals
Week 3	Kinetics and Reaction Rates	Exp 2: Ion Exchange
Week 4	Mechanisms of catalysis	Exp 3: Nuclear Decay
Week 5	Thermodynamics (**EXAM #1 on Friday 3/4**)	Exp 4: Kinetics Part I
Week 6	Free Energy and Equilibrium	Exp 4: Kinetics Part II
Week 7	Equilibrium	Exp 5: Equilibrium
BREAK		
Week 8	Acid/Base Chemistry	Exp 6: Protein Stability Part I
Week 9	Buffers and Titrations	Exp 6: Protein Stability Part II
Week 10	Solubility (**EXAM #2 on Friday 4/15**)	Exp 7: Determining Acid pKa
Week 11	Redox Chemistry	Exp 8: Nine Solutions
Week 12	Electrochemistry and Fuel Cells	Exp 8: Nine Solutions
Week 13	Towards a hydrogen economy	No Lab