

General Chemistry_Chem 1B_Summer 2016

Section 61, Course CRN 00213

Instructor: Dr. Yue Liu (liyue@fhda.edu)
Office hours: Tue and Wed. 2 - 3 PM in SC1224

Session	Room	Days	Start Time	End Time
Lecture	SC2204	M-R	6:00 PM	7:15 PM
Lab	SC2204	M-R	3:00 PM	5:50 PM

All lecture slides and online homework assignments are posted on CATALYST.

Learning objectives

1. Demonstrate a knowledge of intermolecular forces.
2. Evaluate the principles of molecular kinetics.
3. Apply principles of chemical equilibrium to chemical reactions.
4. Apply the second and third laws of thermodynamics to chemical reactions.

Prerequisites: A "C" or better in Chem 1A

Necessary Materials

1. Text book: Chemistry: *The Molecular Nature of Matter and Change*, 7e, by Silberberg
2. 1B experiment handouts. Downloaded from <http://www.deanza.edu/chemistry/Chem1B.html>
3. A laboratory notebook
4. A scientific calculator that has at least log and exponential functions is required.
5. Safety goggles, Visorgogs® or Z87.1-2010 Rates Safety Glasses
6. Three scantron sheets (Form No. 882-E)

Resources

- **Disability Support Program and Services** is located in SCS41 (408-864-8753 or 408-864-8748 TTY or dss@deanza.edu) to coordinate reasonable accommodations for students with verifiable documentation. <http://www.deanza.edu/dsps/>
- **Tutoring service** is located in S43 among many other campus services offered by the student success center: <http://www.deanza.edu/studentssuccess>

Adds and Drops

If you do not show up for more than one day during the first week, you will be dropped. If you choose to drop the course at any point during the quarter, it is your responsibility to withdraw from the course through Admissions and Records by the appropriate deadline.

Last Day for Adds	July 03, 2016
Last Day for Refund	June 29, 2016
Last Day for Drops w/o W	July 04, 2016
Last day for P/NP	July 07, 2016
Last Day for Drops with W	July 27, 2016

COURSE GRADING POLICIES:

Types of Assignments	Points per Item	Number of Assignments	Total points	Percentage
Lecture and Final Exam	100	2 and 1	300	50%
Catalyst Homework	20	6	120	20%
Lab Exam	30	3	90	15%
Pre-lab	5	8	35 (drop the lowest)	6%
Lab Report	8	8	56 (drop the lowest)	9%
Total			601	

97-100 %	A+	93-97 %	A	90-93 %	A-
85-90 %	B+	82-85 %	B	77-82 %	B-
74-77 %	C+	70-74 %	C		
60-70%	D	0-60 %	F		

ATTENDANCE

It is expected that you attend and participate in all of the lecture and laboratory sessions. If you must be absent, **you are responsible to contact the instructor via emails**. You should also exchange phone numbers with a few classmates whom you can contact regarding material missed if you must be absent.

HOMEWORK

- All Catalyst HW assignments are due on **Aug. 04, 2016 @ 3 PM**. No late submission will be accepted.

EXAMS

Make-up exams will NOT be given. Accommodations will be made ONLY for VERIFIED illness or legitimate emergencies. Documentation is required.

CLASS RULES AND REGULATIONS-Professional behavior is expected

- Arrive on time.** The classroom is an academic environment where students come to focus and learn. Those students who arrive on time, ready to learn, should not be disturbed by students coming in late. If you arrive late to lecture, please enter quietly from the back of the classroom.
- Be polite** to your instructor and fellow students. Any type of vulgar or rude language toward the instructor or another student may result in dismissal from the course. This rule applies to emails and phone messages as well as face-to-face exchanges!

Any student who, in my judgment, is habitually disruptive or rude may be dismissed from the class.

Please be polite to mute your cell phones or pagers during lecture and lab.

ACADEMIC DISHONESTY:

It is your responsibility to understand what constitutes academic dishonesty in accordance with the Foothill College Academic Honor Code.

Academic dishonesty includes:

- Plagiarism
- During an exam, communicating or transferring information to another student, receiving information from someone else, looking at another person's exam, and/or using unauthorized materials such as text books, notes, etc.
- Having another person complete and submit work in your name.
- Lying to an instructor to improve your grade.
- Altering a graded work after it has been returned and then submitting the work for regarding.

The first offense results in a zero of that assignment for all students involved. The second offense results in an "F" grade for the class.

Laboratory syllabus

Daily Check-in and Check-out Policies

- All students are expected to arrive to lab on time. If you are **more than 20 minutes late**, you get one point deduction for every 10 minutes that you are late for.
- All students are expected to do a conscientious and thorough job of cleaning up after themselves, whether it be in their own work area in the lab, or shared areas such as the chemical supply fume hood, the balance area, and the waste hume hood. You need to **obtain my signature after you finish** the activities designated for each lab meeting.

Lab Safety

- Being safe in the lab is a top priority. Any unsafe behavior, intentional or not, will be noted and may be cause for dismissal from the class.
- For your protection, safety goggles or visorgogs with indirect ventilation and an ANSI minimum rating of Z87.1-2010 must be worn AT ALL TIMES in the laboratory. TWO warnings will be issued to any student that is observed wearing their googles/visorgogs on their forehead, hanging them around their neck, etc. instead of wearing over their eyes. If the warning is disregarded, expulsion from the lab may result.

Absences

- Any unexcused absence results in a zero grade for the missed lab.
- An excused absence, upon verification with written proof, receives partial credit: 3 points for the pre-lab and 5 points for the lab report (completed using other students' data).

Late submission

- All pre-labs should be prepared before you come to the lab. I will check the pre-lab after I finish the lab lecture. If you have not started or finished the pre-lab by then, your pre-lab assignment will receive 1-4 points deduction.
- Late lab reports receive 1 point deduction per lab meeting.

All Lab Exams are Open Lab Notebook!

How to Prepare The Pre-Lab Write-up

Medicine, dentistry, pharmacy, engineering, biology, physics, chemistry and a large number of other fields require perceptive observations and accurate data recording. The chemistry laboratory provides a good opportunity for this training and practice. A laboratory notebook is required, and it will be brought to every laboratory session. **PEN ONLY!**

Prepare your notebook for each experiment *prior to the start of lab lecture*. **NOTE:** All information must be entered into your notebook by you in PEN! You are not allowed to “cut and paste” this information from the lab packet.

1. INTRODUCTION

- A specific title.
- Name
- Date
- Page number
- A briefly but clearly stated objective(s).
- Applicable background summary including, important chemical reactions, mathematical formulas, etc.

2. LIST OF REAGENTS

- Include a list of necessary STOCK reagents. Make sure all concentrations are noted.

3. A BRIEF OUTLINE OF THE EXPERIMENTAL PROCEDURE

The procedure should be a brief but complete outline of what will be done in the lab. ***Include what to do information.*** Details on **how to do** the lab are **not** needed.

The written procedure should contain enough information for the lab instructor to do the experiment and collect the proper data. Do not include specific instructions on how to run lab instruments.

4. DATA

Data section contain a clear and complete record of all observations and measurements. There are two types of data:

(a) Quantitative measurements, e.g. The dog weighs 100 pounds. (includes units)

(b) Qualitative observations, e.g. The dog is large and is colored tan with blue spots.

- **Data tables should have appropriate headings. Remember to include units and to record data to the proper number of significant figures.**
- The original data are to be recorded **directly and legibly in permanent ink in your notebook, NO PENCIL! POINTS WILL BE DEDUCTED FOR THE USE OF PENCIL IN LAB! DO NOT RECORD DATA ANYWHERE BUT IN YOUR NOTEBOOK!** If an error is made, a **single** line is drawn through the error (~~like this~~) and the new value is written above,

below or next to the original entry. **Do NOT use correction fluid or erasers. POINTS WILL BE DEDUCTED!**

- Finally, sign and date each **data** page.

Some tips on preparing your notebook:

- Make sure you start each experiment on a new page.
- Make sure all chemicals needed are listed with the necessary concentrations.
- What glassware to be used can usually be omitted in the procedure unless it is very specific. Specifying the size of a test tube or beaker is often not necessary.
- **For the procedure DO NOT INCLUDE ANY OBVIOUS “HOW TO” STEPS. ONLY INCLUDE “WHAT TO DO” STEPS.** For example, if the procedure calls for preparation of a 0.050 M NaOH solution from dilution do not include what pipet to use, how much volume to pipet etc. Your notebook simple needs to read: “Prepare 25 mL of a 0.050 M NaOH solution from a 0.10 M stock solution.”
- Omit all instructions on how to operate lab instruments, such as a pH meter. Simply state what to do. For example, “Calibrate the pH sensor using pH 4 and 10 buffers” would be an adequate step for using pH sensors.

Lab Notebook Grading Rubrics

Aspects Evaluated	Point Value (pt)
Completeness	1
Accuracy of Information	1
Significant Figure and Units in Data Recording	1
Legibility and Formatting	1
Pen only! Correct way of correcting a wrong entry. Date and sign each data page.	1

A sample pre-lab is given as follows:

Objectives

1. To derive a mathematical relationship between V and T for a gas.
2. To develop graphing skills for data analysis.
3. To learn the LabQuest and LoggerPro software.

Background

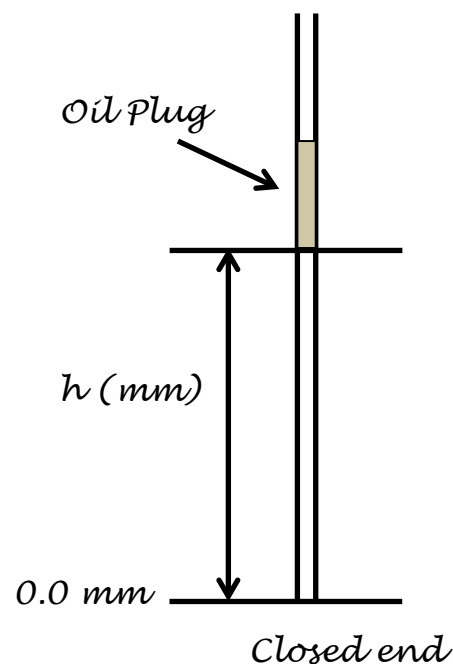
1. a gas consist of particles in constant, rapid motion that act independently of one another.
2. the volume (V) of a gas is mostly empty space.
3. the average kinetic energy (KE) of the gas particles is proportional to the gas temperature, T in Kelvin.
4. the elastic collisions of the gas particles with the walls of the container create the Pressure (P) of the gas.

List of Reagents

Mineral oil

Experimental Procedure:

1. Record the inner diameter of the capillary tube.
2. Prepare a column of trapped air in a capillary tube by heating the tube and then immersing the open end of the tube in mineral oil. See figure.
3. With a rubber band, attached the tube to a metal ruler so the closed end is aligned with the zero mm mark of the ruler.
4. Place the tube and ruler in a water bath. Heat the water bath to boiling.
5. As the water cools, record the temperature to 0.1 C as the top of the air column (h) passes through each mm scale division.



Data and Observations

Inner diameter of capillary tube: 1.0 mm

Height of air column as air is cooled.

h (mm)	T (C)
53.0	75.6
52.0	64.6 64.5
51.0	62.5
50.0	57.8
49.0	52.0
48.0	45.1
47.0	40.3

Course Calendar

Week	Monday	Tuesday	Wednesday	Thursday
	Jun. 27	Jun. 28	Jun. 29	Jun. 30
1	Lecture syllabus, Lab syllabus	Ch 5: Gases	Ch 5: Gases	Ch 5 review
	Lab safety, Lab Check-in	Lab 1:Molar Volume (1)	Lab 1:Molar Volume (2)	Lab Report 1 Due Lab 2: Vapor Pressure (1)
	Jul. 04	Jul. 05	Jul. 06	Jul. 07
2	Holiday	Ch 12: Liquids and Solids	Ch 12: : Liquids and Solids	Ch 12 review
		Lab 2: Vapor Pressure (2)	Lab Report 2 Due Lab 3: Iodine Clock Rxn (1)	Lab Exam 1 (Lab 1 and 2) Lab 3: Iodine Clock Rxn (2)
	Jul. 11	Jul. 12	Jul. 13	Jul. 14
3	Exam 1 (Ch 5 and 12)	Ch 16 Kinetics	Ch 16 Kinetics	Ch 16 Kinetics
	Lab 3: Iodine Clock Rxn (3)	Lab 3: Iodine Clock Rxn (4)	Lab Report 3 Due Lab 4: Kc by Spectrometry (1)	Lab 4: Kc by Spectrometry (2)
	Jul. 18	Jul. 19	Jul. 20	Jul. 21
4	Ch 16 review	Ch 17 Equilibrium	Ch 17 Equilibrium	Ch 17 review
	Lab Report 4 Due Lab 5: Ka of a weak acid	Lab Exam 2 (Lab 3 and 4) Lab 6: pKa of indicator (1)	Lab Report 5 Due Lab 6: pKa of indicator (2)	Lab Report 6 Due Lab 7: Green salts (1)
	Jul. 25	Jul. 26	Jul. 27	Jul. 28
5	Exam 2 (Ch 16 and 17)	Ch 18 Acids and Bases	Ch 18 Acids and Bases	Ch 18 review
	Lab 7: Green salts (2)	Lab 7: Green salts (3)	Lab 7: Green salts (4)	Lab 7: Green salts (5)
	Aug. 01	Aug. 02	Aug. 03	Aug. 04
6	Ch 20 Thermodynamics	Ch 20 Thermodynamics	Ch 20 review	Final Exam (Ch 18 and 20) 3:00 – 5:00 pm @ SC2204
	Lab Report 7 Due Lab 8: Calcium Hydroxide (1)	Lab 8: Calcium Hydroxide (2)	Lab Exam 3 (Lab 5-7) Lab Report 8 Due Lab Check-out	