

**GENERAL CHEMISTRY, CHEM-1B, WINTER 2016**

**INSTRUCTOR: DR. RAM SUBRAMANIAM**

**Instructor Contact Information**

Dr. Ram Subramaniam

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Office Hours: Monday to Thursday 10:30 to 11:30 a.m.

**Class Meeting**

Lecture: MLC 105

Lecture time: MW 4:30 to 5:45 p.m.

Lab: SC 2204

Lab time: Section 03- MW 11:30 to 2:20 p.m. and Section 04- TTh 11:30 to 2:20 p.m.

**Textbook**

Lecture- Chemistry - The Molecular Nature of Matter & Change, Silberberg, M., 6<sup>th</sup> or 7<sup>th</sup> edition, McGraw Hill

Lab- <http://deanza.edu/chemistry/Chem1B.html>

**Course Content**

General Chemistry at De Anza College is presented as a three-part class. In this second installment of the sequence, we will start with a discussion of gas laws and kinetic molecular theory. We will then learn about intermolecular forces and their effects on chemical and physical properties. This will be followed by a discussion of rates of reactions and chemical kinetics. The second half of the quarter will be dedicated to a discussion of a variety of concepts pertaining to chemical equilibrium: reversible reactions, weak acids, weak bases, acid and base dissociation constants, autoionization of water, and pH of solutions. The final topic of this quarter is chemical thermodynamics and the concepts of entropy and free energy.

**Student Learning Outcomes**

1. Evaluate the principles of molecular kinetics.
2. Apply principles of chemical equilibrium to chemical reactions.
3. Apply the second and third laws of thermodynamics to chemical reactions.

## **Academic Integrity**

All graded assignments must be completed without any consultation (people, books, internet) unless otherwise permitted by the instructor. Any student that violates this policy will receive a failing grade (F) in the class and reported to appropriate administrative authorities such as the Dean. Please refer to the Student Handbook for detailed information: <http://www.deanza.edu/studenthandbook/academic-integrity.html>

## **Attendance Policy**

Failure to attend any of the lectures or laboratory classes during the first two weeks will result in you being dropped from the class. You are expected to attend all lecture and laboratory classes. Strong evidences exist that indicate that student success is directly related to class participation. You will be given an “F” grade for unexcused absences in TWO or more lecture and/or laboratory periods.

Excused Absence: If you know in advance that you will need to miss a class, please notify the instructor and provide proof of the excuse. If you have already missed a class, please follow up with the instructor as soon as possible and provide a proof of a valid excuse. Valid excuses are: birth/death in the family, work-related travel, illness/medical emergencies, conference travels, jury duty, accidents, legal issues, or traveling to represent De Anza College at meetings/other events. Other excuses will be considered on a case-by-case basis. Please note that verifiable documented proof of the excuse is essential in order to grant a make-up.

## **Cell Phone Policy**

Use of cell phones is strictly prohibited during class. There is to be no text messaging, browsing the Internet, or voice conversations. Violation of this policy will bar you from attending office hours and may result in failure in the class.

## **Evaluation**

The lecture portion of the class is weighted at 75% and the laboratory portion is 25%. You must complete all the lab experiments and pass the lab in order to pass the class. The evaluation for the laboratory part will consist of lab reports, lab exams, attendance, and notebook.

## Lecture Schedule

The following is a tentative schedule for the lecture portion of the class. It is highly recommended that you read the relevant sections in the book prior to the lecture. Periodically, the instructor may assign certain sections of the book to be read on your own and these will not be covered in the lecture. You will receive appropriate instruction for such readings during the lecture. Some laboratory periods may be used for lectures.

Week	Dates	Topic	Chapter
1	January 4	Gases and Kinetic Molecular Theory	5.1 to 5.3
1	January 6	Gases and Kinetic Molecular Theory	5.4 to 5.5
2	January 11	Intermolecular Forces	12.1 to 12.2
2	January 13	Exam 1	5
3	<i>January 18</i>	<i>MLK day, holiday</i>	
3	January 20	Intermolecular Forces	12.3, 12.5
4	January 25	Kinetics	16.1 to 16.3
4	January 27	Exam 2	12
5	February 1	Kinetics	16.4
5	February 3	Kinetics	16.5 to 16.7
6	February 8	Equilibrium	17.1 to 17.4
6	February 10	Exam 3	16
7	<i>February 15</i>	<i>President's day, holiday</i>	
7	February 17	Equilibrium	17.5 to 17.6
8	February 22	Acid-Base Equilibrium	18.1 to 18.3
8	February 24	Exam 4	17
9	February 29	Acid-Base Equilibrium	18.4 to 18.6
9	March 2	Acid-Base Equilibrium	18.7 to 18.9
10	March 7	Thermodynamics	20.1 to 20.2
10	March 9	Exam 5	18
11	March 14	Thermodynamics	20.3 to 20.4
11	March 16	Lab Exam	
<b>12</b>	<b>March 23</b>	<b>Final Exam: 4 to 6 p.m.</b>	

### Important Dates

Date	Activity
January 16	Last day to <a href="#">add</a> quarter-length classes
January 17	Last day to <a href="#">drop</a> for a full <a href="#">refund or credit</a>
January 18	Last day to <a href="#">drop</a> a class with no record of grade
February 26	Last day to <a href="#">drop</a> with a "W."

## Grading

<i>Lecture: 750 points</i>	
<i>Exams</i>	$5 \times 100 = 500$ points
<i>Homework</i>	$5 \times 20 = 100$ points
<i>Final Exam</i>	$1 \times 150 = 150$ points

<i>Lab: 250 points</i>	
<i>Lab report</i>	$10 \times 10 = 100$ points
<i>Pre-Lab</i>	$10 \times 5 = 50$ points
<i>Lab exam</i>	$1 \times 100 = 100$ points

### *Grading Scale*

In order to obtain the final letter grade for the class, your total lecture score will be added to your lab score and a percentage score will be computed based on the total. This percentage score will be rounded to the nearest whole number and a letter grade will be assigned as per the following table. Grades will not be based on a curve. Please note that regardless of your overall score, if you do not complete all the lab assignments you will receive an F grade in the class.

<b><i>Percentage points</i></b>	<b><i>Grade</i></b>
97-100	A+
92-96	A
88-91	A-
85-87	B+
82-85	B
78-81	B-
74-77	C+
70-73	C
66-69	D+
60-65	D-
0-59	F

### *Other Options*

Pass/No Pass: A grade of "C" or higher is considered "Pass" in the course and lower than "D+" is considered "No Pass" in the course.

Audit: If you do not need any credit for this course, you may elect to audit the course.

Note: You are not permitted to attend this class if you are not officially registered.

## Lab

The following is a schedule of experiments that will be performed this quarter. Prior to start of a particular lab, you must complete the pre-lab exercise and must have read the lab manual completely. Failure to comply may result in not being able to complete the lab experiment at the assigned time.

<b>Date (section 05)</b>	<b>Date (section 06)</b>	<b>Topic</b>
1/4	1/5	Introduction and Check-in
1/6	1/7	Experiment B1: Gases
1/11	1/12	Experiment B1: Gases
1/13	1/14	Experiment B2: Vaporization
1/18	1/19	No Lab
1/20	1/21	Experiment B3: Kinetics
1/25	1/26	Experiment B3: Kinetics
1/27	1/28	Experiment B3: Kinetics
2/1	2/2	Experiment B3: Kinetics
2/3	2/4	Experiment B4: $K_c$
2/8	2/9	Experiment B4: $K_c$
2/10	2/11	Experiment B5: $K_a$ , $K_b$
2/15	2/16	No Lab
2/17	2/18	Experiment B6: Indicator
2/22	2/23	Experiment B6: Indicator
2/24	2/25	Experiment B7: Green Crystal
2/29	3/1	Experiment B7: Green Crystal
3/2	3/3	Experiment B7: Green Crystal
3/7	3/8	Experiment B7: Green Crystal
3/9	3/10	Experiment B8: Calcium hydroxide
3/14	3/15	Experiment B8: Calcium hydroxide
3/16	3/17	Check out

Lab Notebook: You are required to maintain a detailed laboratory notebook. Pre-lab assignments and all data obtained in the lab must be carefully documented in your notebook. All entries in the lab notebook must be in PEN.

Pre-lab Assignment: Prior to coming to lab, you must complete a numbered outline of the procedure for the experiment that will be performed on the particular day. You must also enter a blank data table for the data to be obtained in the laboratory. Failure to complete the pre-lab assignment will result in no credit for that experiment. Additionally, you will not be permitted to be present in lab that day.

Lab report: Complete the calculations and data analysis sections for each experiment and submit them by the due date given below.

Lab Report Due Dates:

	<b>Section 05</b>	<b>Section 06</b>
Experiment B1	1/11	1/12
Experiment B2	1/20	1/21
Experiment B3	2/3	2/4
Experiment B4	2/10	2/11
Experiment B5	2/10	2/11
Experiment B6	2/24	2/25
Experiment B7	3/9	3/10
Experiment B8	3/16	3/17

**Items to Purchase**

1. Textbook: Silberberg 6<sup>th</sup> edition
2. Notebook for lecture notes
3. Laboratory notebook: [http://www.amazon.com/Student-Lab-Notebook-Spiral-duplicate/dp/1930882742/ref=sr\\_1\\_6?ie=UTF8&qid=1441219297&sr=8-6&keywords=laboratory+notebook](http://www.amazon.com/Student-Lab-Notebook-Spiral-duplicate/dp/1930882742/ref=sr_1_6?ie=UTF8&qid=1441219297&sr=8-6&keywords=laboratory+notebook)
4. Safety goggles: <http://books.deanza.edu/MerchDetail.aspx?MerchID=1341936&num=4&start=49&end=60&type=1&CategoryName=GENERAL%20MDSE&CatID=5322&Name=GENERAL%20MDSE&Catalog=966>
5. Scientific calculator