LOS ANGELES MISSION COLLEGE-SPRING 2013
CHEMISTRY 102-SECTIONS 3157 & 3158
Lecture: MW 5:15-6:40 ; Room: CMS-236
Lab (3157): MW 6:50-10:00 ; Room: CMS-210
Lab (3158): MW 6:50-10:00 ; Room: CMS-206

INSTRUCTOR: Said Pazirandeh
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OFFICE: CMS 242
OFFICE HOURS: TW 3:30-4:30

INSTRUCTOR (Lab): Maria Fenyes
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OFFICE: CMS 210
OFFICE HOURS: MW 10:00 – 10:35 p.m.

INSTRUCTOR (Lab): Gayane Godjoian
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OFFICE: CMS 244
OFFICE HOURS: T 9:00-12:00
TTH 2:00-3:15

1. **PREREQUISITES**:
   - Chemistry 101 with a grade of C or better.
2. **RECOMMENDED**:
   - Completion of Math 260 (Precalculus) or a higher level Math class with a grade of "C" or better

3. **TEXTBOOK**:
   - Required: "**Chemistry: A Molecular Approach**", Nivaldo Tro (2nd Edition; ISBN 978-0-321-61578-5)
   - Copy of the Textbook will be available on Reserve in the Library.

4. **LABORATORY NOTEBOOK:**
   - Required: This is a **quadrille paper,** hard cover "Comp Book", available in the LAMC Bookstore and in general office supply stores. You are required to have your laboratory notebook by the 2nd class meeting.
   - You are required to report all laboratory work in your Laboratory Notebook (See Page 5 f this outline for the proper use of the Laboratory Notebook).

5. **SCIENTIFIC CALCULATOR**
   - Need not to be an expensive type, but it must perform the following operations: Addition, Subtraction, Multiplication, Division, Square Root, 1/x, and Logarithms.
   - You are required to have your calculator with you for all class sessions (lectures and labs).

6. **SAFETY GOGGLES**
   - Unless specifically instructed otherwise by your instructor, you must wear safety goggles during laboratory work. Safety goggles are available for purchase in the LAMC Bookstore. You are required to have your safety goggles by the second class session. You may keep your goggles locked in your laboratory locker.
   - **While in the laboratory, students must wear safety goggles at all times, unless otherwise directed by the instructor. Failure to wear goggles unless directed by the instructor is grounds for dismissal from the laboratory.**

7. **PERIODIC TABLE OF THE ELEMENTS**
   - You are required to have your own Periodic Table of the Elements with you, for all class sessions.
   - The particular type of Periodic Table used for this course is available online at my website.

CHEMISTRY 102 is a demanding course!
IF YOU WISH TO DO WELL IN THIS CLASS, YOU CANNOT AFFORD TO BE ABSENT!

STUDENT LEARNING OUTCOMES

1. Describe, explain and model chemical and physical processes qualitatively at the molecular level in order to explain macroscopic properties.
2. Solve quantitative chemistry problems through integration of multiple ideas and demonstrate reasoning clearly and completely.
3. Analyze results of laboratory experiments, evaluate sources of error and prepare clear and organized laboratory reports.
4. Perform laboratory techniques safely and accurately and maintain a laboratory notebook according to standard scientific guidelines.
5. Design, construct and interpret graphs accurately.

GRADING SCALE

- You will be assigned a unique student code and password and can check your grade online. More detailed information will be given by the instructor after the 2nd week of class.

- Your grade in the class is composed of the following components:

ASSIGNMENT	*POINTS*	*% OF TOTAL*
• **QUIZZES** (10 x 15 points each)	150	**15**
• **TESTS** (3 x 100 points each)	300	**30**
• **FINAL EXAM**	150	**15**
• **LABORATORY REPORTS**	200	**20**
• **LABORATORY EXAMS**		**20**
First Lab Exam	50	
Second Lab Exam	150	
TOTAL	1000	**100**

- The grading scale in the class is as follows:

A	90% – 100%
B	80% – 90%
C	65% – 80%
D	55% – 65%
F	less than 55%

TENTATIVE LECTURE SCHEDULE

Week	Date	Text Reference	Topic
1	Feb. 4	13.1-13.2	Introduction to class – Rates of Reactions
	Feb. 6	13.3-13.4	Rate Laws
2	Feb. 11	13.5	Temperature & Rate
	Feb. 13	13.6-13.7	Reaction Mechanisms & Catalysis
3	Feb. 18	-------	President's Day (College closed)
	Feb. 20	14.1-14.5	Chemical Equilibrium & Equilibrium Constant
4	Feb. 25	14.6-14.8	Calculations with Equilibrium Constant
	Feb 27 **Mar. 1**	14.9 -------	Let Chaterlier's Principle/Review for Test 1 ***Last day to drop without a "W" (In Person)***
5	**Mar. 4**	**-------**	**Test 1 (Chapters 13–14)**
	Mar. 6	15.1-15.4	Introduction to Acids & Bases
6	Mar. 11	15.5-15.6	Calculating pH of Strong Acids
	Mar. 13	15.6-15.7	Weak Acid & Base Equilibria
7	Mar. 18	15.9-15.11	Acid Strength & Molecular Structure
	Mar. 20	15.8	Acid-Base Properties of Salts
8	**Mar. 25**	**-------**	**Test 2 (Chapters 15)**
	Mar. 27	16.1-16.3	Buffers/Common-Ion Effect
9	March 29- April 5	------	Spring Break (College closed)
10	April 8	16.4	Acid-Base Titrations
	April 10	16.5	Solubility Equilibria
11	April 15	16.8	Complex-Ion Equilibria
	April 17	16.6-16.7	Selective Precipitation/Qualitative Analysis
12	April 22	-----	Review for Test 3
	April 24	**--------**	**Test 3 (Chapters 16)**
13	April 29	17.1-17.4	Laws of Thermodynamics
	May 1 **May 3**	17.5-17.8 -------	Gibbs Free Energy & Spontaneity ***Last day to drop with a "W" (In Person)***
14	May 6	17.9.	Free Energy & Equilibrium
	May 8	18.2	Balancing Redox Equations
15	May 13	18.3	Voltaic Cells & Cell Notations
	May 15	18.4	Standard Cell Potential
16	May 20	18.5	Cell Potentials, Free Energy and Equilibrium
	May 22	18.6	Cell Potential and Concentration
17	**May 29 (5:30-7:30)**		**FINAL EXAM (Chapters 17, 18)**

LABORATORY WORK

In all laboratory work each student will be assigned a locker, and responsible for its contents. The majority of the experiments are performed individually, however, a few are performed in pairs. For these experiments, each student:

1. Must take active part in the work,
2. Report his/her data individually,
3. Do his/her own calculations,
4. Turn in an individual lab report for grading purposes, and
5. Will be assigned an individual grade for every activity.

- Laboratory Reports are due on Mondays following the week during which the experiments have been performed (this is to allow working students to meet the deadline).
- Assessing Late Penalty for lab reports is up to the instructor's discretion, and could equal to 10% of lab report grade for each day late.
- After the instructor has returned the graded lab reports to the class, lab reports for that particular experiment are no longer accepted for grading.
- In order to work efficiently and meet the required deadline for turning in the lab reports, **you must come** to the laboratory well prepared.

This means:

1. **Read carefully (several times, if needed) the Experiment you will perform (both Principles and Procedure) prior to coming to the lab.**

2. **Think about what will be doing and plan ahead.**

3. **Prepare your Laboratory Notebook in advance (Purpose of the Experiment and the appropriate Data Tables may be prepared in your Laboratory Notebook in advance).**

4. **After the first laboratory session, you may not work in the laboratory if you do not have a Laboratory Notebook. Please see page 5 of this outline about proper usage of your Laboratory Notebook.**

5. **The laboratory portion of the course makes up 40% of your grade:**
   A) Laboratory Reports and Unknowns: 20%
   B) Laboratory Exams: 20% (open lab notebook)

6. **THERE IS NO MAKE-UP LABORATORY WORK**

INSTRUCTIONS FOR LABORATORY NOTEBOOK

Each student must have a **quadrille ruled, sewn** Laboratory Notebook in which to record data and observations, do calculations, and analyze results of the lab work.
The Lab Notebook must be brought with you to every lab session and all data and observations must be recorded **directly into the Notebook** (no where else) **and in ink** (no pencil). Laboratory records are legal documents in industry and research. They are required to support patent applications or to resolve disputes or originality of research.
You will write only on the **right hand pages**. The left-hand pages are reserved for calculations and notes that do not belong on the right hand page.
Begin with a **TITLE PAGE** State the course, section number, semester, the instructor's name, your name and your locker number.
The second page is an **INDEX.** As you do each experiment, list it by title and enter the numbers of the pages containing text for it.
Leave a second page for continuation of the Index. At the bottom of the second index page, give the **complete bibliographic information** for the laboratory text used. (Title, author, publisher, date.) When you do this you can cite a reference simply by "Text"; otherwise you must cite the complete reference each time.
The remainder of the **right-hand pages** in the Notebook should be **numbered sequentially in the upper right corner of the page**.
The **FORMAT** of the pages for each lab experiment is as follows:

TITLE:	Here you enter the title of experiment.	Page Number:	Date:
PURPOSE:	Write a short statement (one or two sentences, in your own words) of the purpose or the goal of the experiment.		
PROCEDURE:	Cite a reference to the appropriate text(s). Any changes made by the instructor may be noted on the left-hand side of the page.		
DATA/OBSERVATIONS:	Prepare a data table in which you will record the measurements you make in the lab. The lab Report Form often will provide a good format but it is wise to check with the instructor about the amount of space to be allowed when observations, rather than measurements, are to be recorded. Be careful to indicate units wherever appropriate.		
RESULTS:	This presents, in table form, the final answers to any required calculations. All work (i.e., set-ups for all **calculations**) must be shown on the **left-hand page**.		
CONCLUSIONS:	Essentially, your conclusions should answer the Purpose or the Goal of the Experiment. Write a few words of conclusion, indicating any experimental errors and their effects on your results. Also state whether or not you achieved the purpose of the experiment.		

As you work, enter your Data/Observations **in ink.** If you make an error or repeat an exercise, **DO NOT ERASE ANYTHING.** You may draw a line through the offending information and then enter the new value (It may be necessary to do this on the left-hand page, if there is no room on the right-hand page.)
If the entire page is in error, simply draw a diagonal line through the page and fold the page in half vertically.
NEVER, NEVER, TEAR OUT A PAGE (other pages will fall out as well).
BE PREPARED TO SHOW YOUR NOTEBOOK TO YOUR INSTRUCTOR AT ANY TIME!

TENTATIVE LABORATORY SCHEDULE

Week	Date	Exp. #	Activity
1	Feb. 4	----	Laboratory Procedures; Safety Discussion; Check-in
	Feb. 6	1	The Iodine "Clock" Reaction (Part I)
2	Feb. 11	1	The Iodine "Clock" Reaction, (Part II)
	Feb. 13	1	The Iodine "Clock" Reaction (Calculations)
3	Feb. 18	-----	President's Day (College closed)
	Feb. 20	2	The Hydrolysis of t-Butyl Chloride
4	Feb. 25	2	The Hydrolysis of t-Butyl Chloride(Calculations)
	Feb 27	**----**	**First Lab Exam (You may consult your Laboratory Notebook)**
5	Mar. 4	3	The Equilibrium Constant
	Mar. 6	3	The Equilibrium Constant (Calculations)
6	Mar. 11	4	The Equilibrium Game
	Mar. 13	5	Stresses on Equilibrium
7	Mar. 18	5	Stresses on Equilibrium
	Mar. 20	6	Acid & Base Strength
8	Mar. 25	7	pH
	Mar. 27	8	pH of Various Solutions
9	March 29-April 5	------	Spring Break (College closed)
10	April 8	9	Buffers
	April 10	9	Buffers (Calculations)
11	April 15	10	pKa of a Weak Monoprotic Acid
	April 17	10	pKa of a Weak Monoprotic Acid (Calculations)
12	April 22	11	Standardization of NaOH
	April 24	12A	The Molar Mass of a Diprotic Acid
13	April 29	12B	Precision and Standard Deviation
	May 1	13	A Solubility Product Constant
14	May 6	13	A Solubility Product Constant (Calculations)
	May 8	14	Qualitative Analysis
15	May 13	14	Qualitative Analysis
	May 15	14	Qualitative Analysis
16	May 20	------	Check Out
	May 22	**-----**	**Second Lab Exam (You may consult your Laboratory Notebook)**