

LOS ANGELES MISSION COLLEGE-SUMMER 2017
CHEMISTRY 101-SECTION 0121
LEC: MTWTH 8:45-10:15 AM (CMS-236)
LAB: MTWTH 10:25 AM-1:40 PM (CMS-210)

INSTRUCTOR: Said Pazirandeh
E-MAIL: profpaz@earthlink.net
WEBSITE: www.profpoz.com
or paziras@lamission.edu

OFFICE PHONE: (818)364-7705
OFFICE: CMS 242
OFFICE HOURS: BY APPT.

1. **PREREQUISITES:**

- Chemistry 65 with a grade of C or better.
- Mathematics 125 (Intermediate Algebra) with a grade of C or better

2. **TEXTBOOK:**

- Required: “**Chemistry: A Molecular Approach**”, Nivaldo Tro (4th Custom Ed; ISBN 978-1-323-44796-3)
- Copy of the Textbook will be available on Reserve in the Library.
- See helpful hints for selecting textbook available on profpoz.com.

3. **LABORATORY MANUAL:**

- Required: “**Chemistry in the Laboratory**” by J. M. Postma, (7th Edition; ISBN 1-4292-1954-8)
You are required to have your lab manual by the 2nd class meeting.

4. **LABORATORY NOTEBOOK:**

- Required: A bound type carbon-less notebook (available in LAMC bookstore; item # 978-1-930882-74-4).
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. Your lab instructor will provide more information on the requirements for maintaining this lab 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 lab.**

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.

STUDENT LEARNING OUTCOMES

1. Describe, explain and model chemical and physical processes qualitatively at the molecular level in order to explain macroscopic properties. ([Assessment rubric](#))
2. Solve quantitative chemistry problems through integration of multiple ideas and demonstrate reasoning clearly and completely. ([Assessment rubric](#))
3. Perform laboratory techniques safely and accurately, analyze results of laboratory experiments, evaluate sources of errors, and use laboratory notebook to write formal laboratory report following standard scientific guidelines. ([Assessment rubric](#))

GRADING SCALE

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

<i>ASSIGNMENT</i>	<i>POINTS</i>	<i>% OF TOTAL</i>
QUIZZES (Weekly)	150	15
LAB EXERCISES	50	5
TESTS (3)	300	30
FINAL EXAM	150	15
LABORATORY REPORTS & UNKNOWNNS	200	20
LABORATORY EXAMS	150	15
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	June 12	1.2-1.5	Introduction to class – Review of Introductory Chemistry
	June 13	1.6-1.8 2.3-2.9	Review of Introductory Chemistry (cont'd)
	June 14	3.2-3.6	Classification of Compounds/Ionic Nomenclature
	June 15	3.7-3.10	Molecular Nomenclature/Composition of Compounds
2	June 19	3.11-3.12	Writing & Balancing Equations/Organic Compounds
	June 19	-----	Last day to drop without a "W" (online)
	June 20	4.2-4.5	Stoichiometry/Solution Concentration and Dilution
	June 21	-----	Test 1 (Chapters 1-3)
3	June 22	4.5-4.8	Aqueous Reactions/Other Double Replacement Reactions
	June 26	4.9	Redox Reactions/Balancing Redox Reactions
	June 27	5.2-5.5	Simple Gas Laws/Ideal Gas Law & Its Applications
	June 28	5.6-5.7	Mixture of Gases/Gases in Chemical Reactions
4	June 29	5.8-5.10	Kinetic Molecular Theory/Real Gases
	July 3	-----	Review for Test 2
	July 4	-----	Independence Day – College closed
	July 5	-----	Test 2 (Chapters 4-5)
5	July 6	6.2-6.5	1 st Law of Thermodynamics/Calculating Heat & Work
	July 10	6.6-6.7	Thermochemical Equations/Constant Volume Calorimetry
	July 11	6.8-6.9	Constant Pressure Calorimetry/Std Enthalpies of Formation
	July 12	7.2-7.4	Light, Waves and Energy/ Bohr's Model of Atom
6	July 13	7.5-7.6	Quantum Mechanics and Atomic Orbitals
	July 17	8.2-8.4	Electron Configuration
	July 18	8.6-8.9	Periodic Properties
	July 19	9.2-9.4	Ionic Bonding/Lattice Energy & Born-Haber Cycle
7	July 20	-----	Test 3 (Chapters 6-8)
	July 21	-----	Last day to drop with a "W" (online)
	July 24	9.5-9.8	Covalent Bonding/Lewis Structures/Resonance
8	July 25	9.9-9.10	Exceptions to the Octet Rule/Bond Energies
	July 26	10.2-10.5	Molecular Shapes & Polarity
	July 27	10.6-10.7	VB Theory/Hybridization of Atomic Orbitals
	July 31	13.4-13.5	Factors Affecting Solubility/Solution Concentrations
8	Aug 1	13.6	Colligative Properties involving Nonelectrolyte Solutes
	Aug 2	13.7	Colligative Properties of Strong Electrolytes
	Aug 3	-----	FINAL EXAM (Chapters 9,10,13)

** This schedule is tentative and subject to change, based on instructor's discretion, as the class progresses.*

LABORATORY WORK

- During laboratory work each student is assigned a locker, and is responsible for keeping the contents clean and undamaged. Students are required to check-out lockers at end of semester. Any damaged or missing glassware or equipment must be replaced through the stockroom before the check-out date.
- Each experiment is performed individually, unless directed otherwise, when they are performed in pairs.
- **For every experiment performed (individually and in pairs), each student,**
 - **will take active part in the work,**
 - **report his/her data individually,**
 - **do his/her own calculations,**
 - **turn in an individual lab report for grading purposes and**
 - **will be assigned an individual grade for every activity.**
- Laboratory Reports are due one week after the class period in which the experiments have been performed. **Late reports are subject to a penalty, as deemed appropriate by the lab instructor.**
- Once 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:**
 - Read carefully (several times, if needed) the Experiment you will perform (both Principles and Procedure) prior to coming to the lab.
 - Think about what will be doing and plan ahead.
 - **Prepare your Laboratory Notebook in advance (Purpose of the Experiment, Procedure, and the appropriate Data Tables should be prepared in your Lab Notebook in advance).**

THERE IS NO MAKE-UP LABORATORY WORK

INSTRUCTIONS FOR LABORATORY NOTEBOOK

Each student must have a **spiral bound copy (bottom page) perforated** Laboratory Notebook (100 pages) 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** (nowhere 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.

The laboratory notebook is a permanent record of all work performed in the laboratory. It is the place where a scientist records all of his or her data, measurements, and observations for future reference. In an academic setting the lab notebook is the storehouse for all information the researcher will use to write articles for scientific journals. In an industrial setting the lab notebook is not only a record of the experiment. It is a legal document that may be critical for obtaining a patent. It should contain enough information so that another scientist could read the notebook and repeat the experiment.

One of the most critical skill that you must learn is to neatly record all your measurements and observations directly in your lab notebook at the actual time you make them. It is improper to scribble data on a loose sheet of paper or to rely on your memory to preserve your observations. Learning to keep complete, reliable records is an important part of learning how to become a good scientist. Here is some general information about keeping a lab notebook and also some information about the specific sections you should have for each experiment.

INSTRUCTIONS FOR LABORATORY NOTEBOOK (cont'd)

General Information

- Your notebook must be bound, having duplicate style sheet. Do not remove original pages from the notebook.
- Write your name, Chemistry 101, your lab section, and semester on the inside front cover.
- Write only on the front side of each white sheet. A duplicate copy will automatically appear on the yellow/blue sheet behind it. Apply sufficient pressure to make a legible copy, but not so much that the writing appears on the next pair of sheets. Remember to place the cardboard between each pair of sheets.
- Unless your lab notebook has a table of contents, reserve the first two pages for a table of contents.
- All entries in your lab notebook must be made in permanent ink. If you make an error, do not attempt to erase it or use a whiteout. Just draw a single line through the incorrect entry.
- Learn to write in the **past tense**, third person (without the use of personal pronouns such as I, we, and my).

Sections of the Notebook Required For Each Experiment

Title. Begin each new experiment on a blank page. Put the full title of an experiment on top of that page. (Write the same title in your table of contents along with the starting page number).

Objectives. Under the title, list the specific objective(s) for the experiment in concise statement(s). Write a short statement (one or two sentences, in your own words) of the purpose or the goal of the experiment. If the experiment contains more than one part, indicate objective of all parts of the experiment.

Procedure. Procedure should be written in the past tense and third person, including amounts of each reagent used, size of glassware, and equipment(s) used. You may write this either as a paragraph or by numerical order. Use only the left column of the notebook. Right column will be used for observations and data to be recorded.

****NOTE.** *The three sections above must be completed before your come in to the lab (no lab will be started unless the following sections are completed).*

Observations and Measurements. You should also record observations of everything that happens during the experiment as it happens using right column of the notebook. Especially pay attention to any change in color, the amount of time it takes for a reaction to occur, unexpected occurrences, temperature readings, amount of solvent used in the experiment, etc. Also write down any modifications you make to the procedure in this section. All numerical data should be recorded directly in the notebook with the proper significant figures and units. Any data recorded on another piece of paper, such as chromatogram, should be permanently attached into the notebook as instructed.

Calculations & Results. All sample calculations must be shown in the notebook, including the subtracting of masses to find the mass of a sample, the use of density to convert between mass and volume, the use of molecular weight (or molar mass) to convert between mass and moles, etc. Your calculation section must include an equation, substitution and answer with significant figures and units. Summarize experimental findings in a tabulated format with correct significant figures and appropriate units.

Conclusion. The conclusion section should include a restatement of what was accomplished in the experiment, a summary of the results, and an analysis of these results. If the results are different from what you expected, discuss possible sources of error.

Questions and Problems. Answer questions and problems assigned either from laboratory manual or provided by your instructor.

References. Give the complete bibliographic information for the laboratory text used. (Title, author, publisher, date).

TENTATIVE LABORATORY SCHEDULE*

Week	Date	Experiment No.	Experiment Title
1	June 12	-----	Introduction to Lab Procedure & Policies/Check-in
	June 13	1	Scientific Measurements
	June 14	2	Mass & Volume Relationships
	June 15	4	Reactions of Household Chemicals
2	June 19	5	A Cycle of Copper Reactions
	June 20	5	A Cycle of Copper Reactions (cont'd)
	June 21	8	Determination of a Chemical Formula
	June 22	8	Determination of a Chemical Formula (cont'd)
3	June 26	9	Determination of a Chemical Formula by Titration
	June 27	9	Determination of a Chemical Formula by Titration (cont'd)
	June 28	Handout A	Net Ionic Equations
	June 29	-----	Lab Exam #1 (Experiments 1, 2, 4, 5, 8)
4	July 3	-----	Review for Lecture Test 2
	July 4	-----	Independence Day – College closed
	July 5	7	Chemistry of Oxygen
	July 6	7	Chemistry of Oxygen (cont'd)
5	July 10	Handout B	Temperature Measurements using Vernier
	July 11	13	Reactivity of Metals with HCl-Method A
	July 12	13	Reactivity of Metals with HCl (cont'd)
	July 13	14	Heat Capacity of Metals
6	July 17	15	Enthalpy Changes in Chemical Reactions
	July 18	17	Emission Spectra and Electronic Structure of Atoms
	July 19	18	Ionic & Covalent Bonding
	July 20	Handout C	Standardization of Base and Titration of an Unknown Acid
7	July 24	Handout C	Standardization of Base and Titration of an Unk Acid (cont'd)
	July 25	Handout D	Lewis Structures/Resonance
	July 26	Handout D	VSEPR, Orbital Hybridization/Molecular Shape & Polarity
	July 27	22	Colligative Properties
8	July 31	22	Colligative Properties (Cont'd)
	Aug 1	-----	Review for Final Exams
	Aug 2	-----	Lab Final Exam (Remainder of experiments)
	Aug 3	-----	Check-Out

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