

LOS ANGELES MISSION COLLEGE-SUMMER 2019
CHEMISTRY 51
Lecture (10685): MTWTh 8:05-10:10 AM; Room: CMS-246
Lab (10695): MTWTh 10:40-12:05 PM ; Room: CMS-201

INSTRUCTOR (Lecture): G. Godjoian, Ph.D.
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OFFICE HOURS: By appointment

CLASS DESCRIPTION: Chem 51 is an introductory class in general chemistry and is designed for students in the following majors: Nursing, Allied Health Sciences; Dietetics, Physical Therapy, Food Science & Environmental & Occupational Health. This course may also be taken to satisfy the Physical Science requirement for General Education. Chemistry 51 at LA Mission College is equivalent to Chemistry 103 or Chemistry 105 at CSUN.

PREREQUISITE: Mathematics 115 (Elementary Algebra) or 123B (Elementary and Intermediate Algebra II) with a grade of "C" or better, or appropriate Math placement results.

- REQUIRED MATERIALS:**
1. **Textbook:** "General, Organic, and Biological Chemistry", by Timberlake, Custom Published for LA Mission College ISBN 978-1-323-87902-3
 - A copy of the textbook is available on Reserve in the Library.
 2. **Lab Manual:** Hand-outs
 3. **Lab Notebook:** A bound-type composition notebook is required for your lab. Your lab instructor will provide more information about this in the lab. You must have the Laboratory Notebook by the second class meeting. You are required to report all laboratory work in your Laboratory Notebook. During the Laboratory Activities you are not permitted to take notes on any kind of loose paper or any notebook, other than the Laboratory Notebook. You may not perform an experiment if you do not have your Laboratory Notebook with you.
 4. **Periodic Table of Elements:** This is available in the LAMC bookstore and on my website. You must have one Periodic Table with you during all class sessions.
 5. **Scientific Calculator:** Need not to be an expensive type, but it must perform the following operations: Multiplication, Division, Addition, Subtraction, square root, 1/x, and log. You are required to have your calculator with you during all class sessions (both 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 third class session. You may keep your goggles locked in your laboratory locker.
 - Failure to wear goggles when directed by the instructor is grounds for dismissal from the laboratory.
 7. **Notebook:** A 3-ring binder is recommended for keeping class notes organized.

**STUDENT
LEARNING
OUTCOMES:**

1. Conceptualize, model and explain chemical processes qualitatively at the molecular level.
2. Extract appropriate information, analyze and synthesize experimental results to reach correct conclusions.
3. Perform laboratory techniques safely and accurately and maintain a laboratory notebook according to standard scientific guidelines.

**ASSIGNMENT
HOMEWORK:**

- Assignment/Homework will be given (assigned) during class time.
- Assignment/Homework due date will be announced during class time.

ATTENDANCE:

- CHEMISTRY IS A DEMANDING SUBJECT!
- YOU CANNOT AFFORD TO BE ABSENT IF YOU WISH TO DO WELL IN THIS COURSE.
- THERE IS NO MAKE-UP FOR MISSED LABORATORY WORK.
- College regulations state that a student may be excluded from a course following accumulation absences equal to a week of course work.

**COURSE
EVALUTATION:**

Your final grade in class is composed of the following:

Quizzes	150 pts
Exams	300 pts
Final Exam	150 pts
Lab Exams	220 pts
Lab Reports	180 pts
Total	1000 pts

GRADING SCALE: The final grades cutoffs are as follows:

A	90% - 100%
B	80% - 90%
C	65% - 80%
D	55% - 65%
F	Below 55%

NOTES:

- **No make up** exams are given for students being absent on the day of the exam.
- If serious and compelling reasons prevent the student from being present on the day of one of the exam, the instructor should be informed **IN ADVANCE** for possible arrangements.

LABORATORY WORK

- During laboratory work two students will share the contents of the same laboratory locker.
- Both students are jointly responsible for the contents of their shared locker.
- The majority (not all) of the experiments are performed in pairs.
- **For every experiment, each student,**
 - 1. will 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 **two days** after the class period in which the experiments have been performed (this is to allow working students to meet the deadline). Turn in Report Form from at a due date (due date will be announced in class).
- **Late reports are subject to a penalty of 10% per day.**
- 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:**
 - 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 Procedure 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 (50 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** (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.

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.

General Information

- Your notebook must be bound. Do not remove original pages from the notebook.
- Write your name, Chemistry 51, your lab section, and session on the inside front cover.
- Write only on the front side of each sheet. Back of each page can be used to write additional notes.
- 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 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. 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. 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.

Results: 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 manua/report form or provided by your instructor.

TENTATIVE LECTURE SCHEDULE

Week	Date	Chapter	Lecture Topic	Text Reference
1	June 10	1	Intro to class; Scientific Method Measurements; Scientific notation	1.1-1.5
	June 11	2	Significant Figures; SI Units	2.1-2.5
	June 12	2	Quiz 1 and Unit Conversions; Density	2.5-2.7
	June 13	3	Energy & Temp.; Classification of Matter	3.1-3.3
2	June 17	3	Quiz 2 and States & Properties of Matter; Calculating Heat <i>Last day to drop without a "W"</i>	3.3-3.7
	June 18	3	Energy & Nutrition/Review for Test 1	3.5
	June 19	-----	Test 1 (Chapters 1, 2 & 3)	-----
	June 20	4	Periodic Table; Atomic Theory; Atomic Structure; Isotopes	4.1-4.4
3	June 24	4	Quiz 3 and Electron Configuration; Periodic Trends	4.5-4.8
	June 25	6	Ionic Compounds – Naming and Writing Formulas	6.1-6.4
	June 26	6	Quiz 4 and Covalent Compounds – Naming and Writing Formulas; Bond Polarity	6.5-6.7
	June 27	6	Molecular Shapes & Polarity Attractive Forces in Molecules	6.8-6.9
4	July 1		Test 2 (Chapters 4 & 6)	
	July 2	7	Types of Chemical Reactions	7.1-7.2
	July 3	7	Balancing Equations; Redox Reactions	7.2-7.3
	July 4	---	No Class- Independence Day	---
5	July 8	7	Quiz 5 and Single & Double Replacement Reactions	Notes
	July 9	7	Mole Calculations	7.4-7.6
	July 10	7	Quiz 6 and Stoichiometry	7.7-7.8
	July 11	7	Limiting Reactants / Percent Yield/Review for Test 3	7.8-7.10
6	July 15	-----	Test 3 (Chapter 7)	-----
	July 16	9	Solutions and Solubility	9.1-9.3
	July 17	9	Net Ionic Equations	9.3
	July 18	9	Quiz 7 and Solution Concentrations	9.4-9.5
	July 21		<i>Last day to drop with a "W"</i>	
7	July 22	9	Solution Properties	9.6
	July 23	11	Quiz 8 and Acids & Bases	11.1-11.4
	July 24	11	Ionization of Water & pH Scale	11.4-11.8
	July 25	8	Quiz 9 and Gases & Their Properties; Gas Laws	8.1-8.4
8	July 29	8	Gas Laws (cont'd)	8.5-8.7
	July 30	8	Quiz 10 and Ideal Gas Law; Gas Mixtures	8.8-
	July 31	-----	Review for Final Exam	-----
	Aug 1	-----	Final Exam (Chapters 8, 9 & 11)	-----

TENTATIVE LABORATORY SCHEDULE

Week	Date	Laboratory/Activity	Points
1	June 10	Introduction to Lab; Safety Video	-----
	June 11	Check-in – Safety Test & Contracts Due	-----
	June 12	Measurements	10
	June 13	Separation of Mixtures	10
2	June 17	Separation of Mixtures, continues <i>Last day to drop without a “W”</i>	-----
	June 18	Quantitative Separation of a Mixture	10
	June 19	Quantitative Separation of a Mixture, continues	-----
	June 20	Density	10
3	June 24	Specific Heat of Metal	10
	June 25	Nomenclature	10
	June 26	Nomenclature	---
	June 27	Molecular Shape and Polarities	10
4	July 1	Review for Lab Exam I	----
	July 2	Lab Exam I (You may use your lab notebook)	80
	July 3	Balancing Reaction Equations	10
	July 4	No Class- Independence Day	---
5	July 8	Combination and Decomposition Reactions	20
	July 9	Combination and Decomposition Reactions	---
	July 10	Single Replacement Reactions	10
	July 11	Double Replacement Reactions	10
6	July 15	Net Ionic Equation Worksheet	10
	July 16	Net Ionic Equation Worksheet	---
	July 17	Empirical Formula of an Oxide	10
	July 18 July 21	Empirical Formula of an Oxide, continues <i>Last day to drop with a “W”</i>	-----
7	July 22	Percentage of Copper in Malachite	10
	July 23	Percentage of Copper in Malachite, continues	-----
	July 24	Table Salt from Baking Soda	10
	July 25	Table Salt from Baking Soda, continues	-----
8	July 29	Properties of Acids & Bases	10
	July 30	Charle’s Law	10
	July 31	Lab Final Exam (You may use your lab notebook)	140
	Aug 1	Clean-up & Check-out	-----