

WEST LOS ANGELES COLLEGE

CHEMISTRY 60 SYLLABUS

Spring 2015

Instructor: Dr. Mesfin Alemayehu

Lecture: T, Th, 8:00-9:25 am MSA 005

Conference: M 8:00-10:05am MSA 005

LAB: W 8:00 –10:05 am MSA 402

Office hour: M, W: 10:05-11:10 am T,Th: 9:30 – 11:00am MSB 209

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Course description and objectives

This course provides an introduction to the chemical elements and general principles and laws of modern general chemistry. It includes a study of chemical reactions basic atomic theory, and molecular structure, as well as chemical bonding and the behavior of gases. It also covers nomenclature and problem solving. The laboratory exercises include gravimetric and volumetric analyses,, elementary qualitative analysis, and experiments in solution chemistry.

Students whose previous chemistry background is inadequate for Chemistry 101 could take this course in preparation for chemistry 101, This course is also recommended for students who have been away from high school chemistry for more than two years.

Student Learning Outcome (SLO): Upon a successful completion of the course, you will be able to:

- A) Gain familiarity with fundamental concepts of chemistry and technical and abstract scientific ideas, which you can utilize to enlarge upon and enrich your own personal experiences.
- B) Apply appropriate mathematics in the solution of various chemical problems.
- C) Use the periodic table to predict some properties of the elements.
- D) Name and write chemical formula of inorganic compounds.
- E) Write balanced equations, and extract stoichiometric information from chemical equations and use them to predict yield.
- F) Understand chemical solutions and prepare solutions of different concentrations
- G) Get familiarity with standard chemical laboratory equipment and differentiate between precision and accuracy of laboratory measurement and their effect on experimental results.
- H) Perform experiments that illustrate fundamental chemical principles and applications and interpret observations in the context of accepted chemical theory.

Text: Zumdahl Introductory Chemistry, A Foundation 8th Ed, Houghton Mifflin Company.

Lab Manual: James F. Hall, Introductory Chemistry in the Laboratory, D. C. Heath and Company, 8th Ed.

The prerequisite for chem. 60 is successful completion of one year high school algebra or math. 115.

Optional Supplementary Materials:

A) Hein, ET al., Foundations of College Chemistry, Publishing Company,

B) P.C. Scott, Study Guide for Hein, et al Foundations of College Chemistry

Provides you with a means of self-evaluation in determining how well you understand the materials of each chapter. It can be helpful if you look at the solutions only AFTER you try the exercises by yourself.

C) S. Stoker, preparatory Chemistry, Macmillan publishing Co. , Inc.

Contains problems and explanatory material as well as text.

D) D. M. Goldish, Basic Mathematics for beginning Chemistry, Macmillan Publishing Co.

Gives elementary, extensive discussions of the sort of algebraic operations needed in chemistry 60. This book might be helpful to you if your math background is weak.

The assigned readings and suggested exercises (see syllabus and lecture schedule) are designed to cover most of the important concepts presented in this course, and their applications. You will find that you need to practice on more exercises than are given on the "suggested" list in order to gain acceptable mastery of the material. There is no substitute for determined and perhaps lengthy effort to work out problems on your own. **You should not seek help until you have done at least some work on the exercise yourself.**

PLEASE UNDERSTAND THAT YOU CANNOT LEARN MERELY BY OBSERVING; IF YOU JUST WATCH ME WORK EXERCISES, OR READ THE SOLUTIONS IN THE SOLUTIONS MANUAL, WITHOUT FIRST HAVING MADE A SERIOUS ATTEMPT BY YOURSELVES, YOU WILL BE SEVERELY HANDICAPPED IN DOING EXAMINATIONS

There are some services on campus for students with learning disabilities. Such students may contact the office and get the appropriate help and accommodations.

Laboratory:

Chem.60 is a laboratory course. Failure to perform the experiments and hand in reports **on time** will result in unsatisfactory grade in the course.

For reasons of safety, lab work may be done only during the assigned laboratory periods and when the instructor is around.

Note: You must wear eye protection whenever you are in the Lab. if you do not have the appropriate eye protection you may be dismissed from the laboratory section with loss of credit for that exercise.

Do not wear contact glasses in the Lab. They can absorb or trap some organic vapors and fumes and could cause eye damage.

Eating or drinking in the Lab. is prohibited. Read the instructions and the procedures for the experiment before coming to the Lab. Preparing flow charts before coming to the Lab will help you to finish the experiment in time and prevents avoidable accidents from happening.

Record all the data (including your observations). Have your lab instructor **sign your report book** before you leave the lab at the end of experiment.

ABSENCES: There will be NO MAKE UP LABS! A grade of zero will be given for a missed lab session unless you can present a DOCUMENTED AND VALID excuse. LAB SWAPPING will be allowed only IF WRITTEN APPROVAL is obtained from me and the other instructor.

Cell phones and any noise making devices must be turned off during class.

* PLEASE NOTE THAT A PASSING GRADE IN THE COURSE WILL BE CONTINGENT ON SUCCESSFUL COMPLETION OF ASSIGNED EXPERIMENTS.

Last day to withdraw without a “W”: Feb 20, 2015

Last day to withdraw with a “W”: May 8, 2015

For other important deadlines, please refer to the calendar section of your class schedule.

THE COLLEGE ACADEMIC HONESTY POLICY (PLEASE READ YOUR CATALOG) WILL BE ABSOLUTELY UPHELD FULLY IN THE COURSE. NEITHER CHEATING OR COPYING WILL BE TOLERATED.

CHEME 60 SYLLABUS AND TENTATIVE LECTURE SCHEDULE **Spring 2015**

| Week of | Topic | Reading Assignment |
|----------------|---|--------------------------------------|
| Feb. 9 | Introductory remarks; Math review Measurements and calculations | Chapter 1 Appendix 1 Chapter 2 |
| Feb. 16 | Matter and Energy | Chapter 3, 10 |
| Feb. 23 | Elements, Atoms and Ions Exam #1 (Chap: 1, 2, 3, 4) | Chapter 4 |
| March 2 | Nomenclature | Chapter 5 |
| March 9 & 16 | Chemical Reactions/Rxn in aqueous solutions | Chapters 6 and 7 |
| March 23 | Chemical composition Exam # 2 (Chap. 5-8) | Chapter 8 |
| March 30 | Chemical quantities | Chapter 9 |
| April 6 | April 6 - Apr 13 Spring Break College closed | |
| April 13 | Modern Atomic Theory | Chapter 11 |
| April 20 | Chemical Bonding Exam # 3, (Chap. 9, 11, 12) | Chapter 12 |
| April 27 | Gases | Chapter 13 |
| May 4/may 11 | Liquids and solids / Solutions | Chapters 14 & 15 |
| May 18 | Acids and Bases Exam #4 (Chap: 13-16) | Chapter 16 |
| May 25 | Equilibrium | Chapters 17 |
| May 25 | Redox reactions*/ Organic Chemistry | Chapter 18/20 |

Final Exam on June 1, 2015

EXAMINATION AND GRADING

There will be four 1- hour examinations (tentative dates given on lecture schedule). You may drop the lowest of the four exam scores.

The hour examinations cumulatively account 40% of your final course grade. A final examination which contributes 40% to your course grade will be given at the scheduled time and **it is cumulative.**

During exams students may leave the exam hall only after submitting their exam paper. A student who left the hall for any reason may not be allowed to come back and finish the exam or make any changes in his/her answers.

A student, who comes to the exam room after the exam is started, may not be allowed to take the exam, if at least one student has left the room before he/she came into the exam room.

Surprise quizzes (20 min) may also be given at the beginning or at the end of the lecture. Cumulatively, quiz scores will represent 5% of your final grade.

Your laboratory grade will be contributing 15% to your final course grade. (please see also the lab schedule)

There will be no make-up exam. If you miss an exam for good reason (need to show documentation), the weight of the remaining exams will be increased accordingly.

After all accumulated points in the course including final exam are totaled the final grades for the course will be assigned according to the following percentages:

| | |
|---------|---|
| > 85 | A |
| 84 - 70 | B |
| 69 - 55 | C |
| 54 - 50 | D |
| < 50 | F |

Chem. 60 Tentative Laboratory experiment schedule

Instructor: Dr. Mesfin Alemayehu

Lab: W 8:00-10:05 am Room: MSA 402 **Dr. Mesfin Alemayehu**
 W 7:05-9:20 pm Room MSA 402 **Staff**

Lab Manual: James F. Hall, Introductory chemistry in Laboratory, D.C Heath and Company, 8th Ed.

| <u>Week</u> | <u>Date</u> | <u>Expt #</u> | <u>Laboratory experiment</u> |
|-------------|-------------|---------------|---|
| 1 | 2/11 | | Check in, Laboratory safety |
| 2 | 2/18 | Exp# 1 and 2 | Mass determinations and Use of Volumetric glasswares |
| 3 | 2/25 | Exp# 5 | Density determinations for: Solids, liquids, solutions |
| 4 | 3/4 | Exp 9 | Calorimetry: Specific heat determination of metals and Glass beads (Part B only) |
| 5 | 3/11 | Exp# 7 | Properties of some representative elements a. Alkali and Alkaline Earth Metals b. Metallic and nonmetallic oxides Parts 1 & 2 only c. The Halogen Family; Parts 1 and d. 2 only |
| 6 | 3/18 | Handout | Nomenclature of inorganic compounds |
| 7 | 3/25 | Exp 19 | Preparation and properties of oxygen |
| 8 | 4/1 | Exp 11 | Properties and rxns of Acid and Base r |
| 9 | 4/8 | | Spring break, college Closed |
| 10 | 4/15 | Exp 10 | Precipitation reaction |
| 11 | 4/22 | Exp 16 | Percentage composition of Magnesium oxide |
| 12 | 4/29 | Exp 18 | Lewis Structures and Molecular shapes |
| 13 | 5/6 | Video | Boyle's and Charles' Laws |
| 14 | 5/13 | Exp 21 | Molar mass of volatile liquid (Ideal gas Law) |
| 15 | 5/20 | Exp. 26 | Acid-Base Titrations |
| | 5/27 | | Check out |