Preparation Course for General Chemistry (Chem. 50-03 & 50-04) Syllabus

Lecture (03 and 04): M-W 2:30 PM – 4:20 PM -- Room S32.
Lab: Tu (03)/Th(04) 2:30-5:20 PM -- Room SC2208

Instructor: Dr. James Maxwell, Mobile phone: (773) 454-7779 (texts also), email: maxwelljames@fhda.edu

Office Hours: Tuesday: 5:30-6:30pm, Second Floor SC1

Description: An Introduction to core theory and problem solving techniques of chemistry as preparation for Chemistry 1A at DeAnza College. The course will include an overview of many of the most important topics in general chemistry, including stoichiometry, atomic and molecular structure, solutions, scientific measurement, the periodic table, and chemical reactions The course material will be approached from both a conceptual and mathematical standpoint.

Student Learning Outcomes:

1. Assess the fundamental concepts of modern atomic and molecular theory.
2. Evaluate the standard classes of chemical reactions.
3. Demonstrate a fundamental understanding of mathematical concepts pertaining to chemical experimentation and calculations.

Evaluation: Your grade will be based on your performance in the following:

7 short Labs (20 pts each) Reports due 1 week after lab	140	
1 Long Lab Report: see instruction below	100	
Lab Final	100	
4 Best Exams (100 pts each)	400	
1 Final (200 pts)	200	
Total	940	points

Letter grades will be assigned according to the *approximate* scale:

A	90%
B	80%
C	70%
D	50%
F	< 50%

Attendance: Your attendance is urged for all lectures and required for all quizzes, exams and labs. Unexcused exam, quiz and lab absences score 0. It is the responsibility of the student to contact the professor regarding missed work. If an absence is anticipated, the student should make arrangements to complete the missed assignments prior to the absence. In an emergency, it is the student's responsibility to contact the instructor within one class period of an exam. *There are no laboratory make-up days*. Please sign the attendance sheet each class.

Homework: Homework will not be collected or graded. It is for your edification and you are strongly encouraged to work as many problems as possible.

Exams: There will be five exams (100 pts each) and one final exam (200 pts) . There will also be a Lab Final exam (100 pts)You will be graded on your best four exams and the final. You must bring your own calculator (if you need one), pencil and eraser for exams. You are permitted to bring a molecular model kit, the instructor must approve if it is assembled in any way. Cell phones may not be used at any time during the exam. Calculators may be used if approved by instructor. Once the exam begins you may not leave the room unless you turn in the

exam, so plan to take a bathroom break *before* class. **No Cell Phones during Exam! Answer Keys will be available after the exam.**

Text: **Introductory Chemistry: Concepts and Critical Thinking**, Charles H. Corwin, 7th ed, 2014, Pearson. You may use another edition if you have it, but you are responsible for know the differences and what material may be omitted for your copy of the text. For textbook bargain prices check out textbooksrus.com, half.com or Amazon marketplace for used books. You can rent your text at www.coursesmart.com

Lab Text: **Laboratory Manual** for Charles H. Corwin Introductory Chemistry, 6th ed, 2013, Pearson.

Labs: All 9 labs count towards your grade. No make-up labs. Late labs will incur a penalty. You **MUST** wear eye protection during lab!

Academic Dishonesty: "Academic dishonesty is a serious offense, which includes but is not limited to the following: cheating, complicity, fabrication and falsification, forgery, and plagiarism. Cheating involves copying another student's paper, exam, quiz or use of technology devices to exchange information during class time and/or testing. It also involves the unauthorized use of notes, calculators, and other devices or study aids. In addition, it also includes the unauthorized collaboration on academic work of any sort. Complicity, on the other hand, involves the attempt to assist another student to commit an act of academic dishonesty. Fabrication and falsification, respectively, involve the invention or alteration of any information (data, results, sources, identity, and so forth) in academic work. Another example of academic dishonesty is forgery, which involves the duplication of a signature in order to represent it as authentic. Lastly, plagiarism involves the failure to acknowledge sources (of ideas, facts, charges, illustrations and so forth) properly in academic work, thus falsely representing another's ideas as one's own."

Word Processing: If you are looking for a **free** word processor compatible with WORD, checkout www.openoffice.org .

Help: If you need help with any aspect of this course, please contact your instructor first. You can also contact the Student Success Center at http://www.deanza.edu/studentsuccess/ to get help with tutoring or with reading, and writing, tutoring or academic skills. Please use this resource.

Calculator: You still need a simple scientific calculator not associated with your mobile phone. They will cost about $10.00.

Eye Protection: You must wear full goggles and not safety glasses. Without them, you may not participate in lab and will receive a grade of zero for that lab. See illustration below. They are available at the bookstore or at hardware stores.

DeAnza Tutoring: On campus you can meet with tutors and attend workshops in the Student Success Center, www.deanza.edu/studentsuccess , or you can use the free online tutoring available to all DeAnza students. Login to MyPortal, go to the Students tab and find the Smarthinking link. For more information go to deanza.edu/studentsuccess/onlinetutoring/

Class Calendar

Date	Lecture 03/04	Date	Lab 03	Date	Lecture 03/04	Date	Lab 04
1/5	Intro to Class *Math Review: Significant Digits, Rounding Off, Addition/Subtraction and Division and Multiplication with Significant Figures, Exponents and Scientific Notation*	1/6	Check-In	1/7	Ch 2: The Metric System	1/8	Check-In
1/12	Ch 2/Ch 3: Matter and Energy	1/13	E2: Instrumental Analysis: The Metric System	1/14	Ch 3 Review problems Ch 2&3	1/15	E2: Instrumental Analysis: The Metric System
1/19	**Holiday: Martin Luther King**	1/20	E3: Density of Liquids and Solids	1/21	**Exam 1: Ch 2-3** Ch 4: Models of the Atom	1/22	E3: Density of Liquids and Solids
1/26	Ch 4/Ch 5: The Periodic Table	1/27	E5: Physical Properties and Chemical Properties	1/28	Ch 5/Ch 6: Language of Chemistry	1/29	E5: Physical Properties and Chemical Properties
2/2	Ch 6/Ch 7: Chemical Reactions	2/3	E7: Families of Elements: The Periodic Table	2/4	**Exam 2: Ch 4-6** Ch 7/Ch 8: The Mole Concept	2/5	E7: Families of Elements: The Periodic Table
2/9	Ch 8/Ch 9: Chemical Equation Calculations	2/10	E13: Analysis of Alum: Percent Composition and Empirical Formula	2/11	Ch 9/Ch 10: Gasses	2/12	E13: Analysis of Alum: Percent Composition and Empirical Formula
2/16	**Holiday: President's Day**	2/17	E10 Analysis of a Penny: Writing and Balancing Chemical Equations	2/18	**Exam 3: Ch 7-10** Ch 11: Liquids and Solids	2/19	E10 Analysis of a Penny: Writing and Balancing Chemical Equations
2/23	Ch 11/Ch 12: Chemical Bonding	2/24	E14: Decomposing Baking Soda: Mass-Mass Stoichiometry and Percent Yield	2/25	Ch 12/Ch 13: Solutions	2/26	E14: Decomposing Baking Soda: Mass-Mass Stoichiometry and Percent Yield
3/2	Ch 13/Ch 14: Acids and Bases	3/3	E21: Electrical Conductivity of Aqueous Solutions: Net Ionic Equations	3/4	**Exam 4: Ch 11-12** Ch14	3/4	E21: Electrical Conductivity of Aqueous Solutions: Net Ionic Equations
3/9	Exam 5 xReview	3/10	E20: Analysis of Vinegar: Acid-Base Titrations	3/11	Final Review	3/12	E20: Analysis of Vinegar: Acid-Base Titrations
3/16	**Exam 5: Ch 13-14** Final Review	3/17	**Lab Final** Check-Out	3/18	Final Review	3/19	**Lab Final** Check-Out
3/23		3/24		3/25	**Final: Ch1-16 @ 1:45-3:45pm**		

INSTRUCTIONS for the Laboratory:

1. Print out, read, sign and return to your instructor the safety statement in the link below. This must be returned by the second laboratory period 13 or 15 January, 2015).
   http://nebula.deanza.edu/PSME_Division/Chemistry_files/Safety%20Document.pdf
2. You must do your laboratory work at the time assigned. Attendance will be taken. Study the experiment carefully before coming to class so that you don't waste time going through the procedure during the lab. **NO MAKE UP LABS**.
3. You must do your own work unless you are told to work in pairs for an experiment. If you need guidance, let the instructor know.
4. Always think through the next step you are going to perform before starting it.
5. **Record all data in ink while you work.** Do not write data on paper towels or other pieces of paper, even temporarily. Make sure your data is complete. **Do not forget to write your name or record any unknown number**. Pay attention to significant figures and units. If you make a mistake, cross it out neatly with a **single** line.
6. All laboratory reports are due one week after the experiment is performed.
7. Children are not allowed in the lab.
8. No eating or drinking in the lab.
9. **ALWAYS WEAR YOUR EYE PROTECTION**. Failure to wear your eye protection will lead to dismissal from lab and a lowered grade for that experiment.
10. You **MUST WEAR LONG PANTS** and **SENSIBLE CLOTHING** when we are doing any lab that required Safety Goggles as discussed during the safety lectures. This is a school policy. If you wear shorts, sandals, or other clothing that is not consistent with safety, you will **not** be admitted to the laboratory. Wear a lab apron if you have one. **You can NEVER WEAR SHORT PANTS or SKIRTS during LABORATORY PERIODS.**
11. Always work with clean equipment. Clean also means **DRY**.
12. Carefully measure the quantity of each material to be used in the experiment.
13. Always place reaction vials, test tubes or flasks in a clean beaker when standing them on a laboratory bench.
14. Do not take reagent bottles to your laboratory work area. Use test tubes, beakers, or paper to obtain chemicals from the dispensing area. Take small quantities of reagents. You can always get more if you run short.
15. Check carefully the label on each reagent bottle to be sure you have the correct reagent. The names of many substances appear similar at first glance.
16. To avoid possible contamination, never return unused chemicals to the reagent bottles. Never interchange spatulas or droppers.
17. Do not insert droppers into large reagent bottles. Instead pour a little of liquid into a small beaker.
18. Be neat in your work; if you spill something, clean it up immediately.
19. Wash your hands anytime you get chemicals on them and at the end of the laboratory period.
20. Keep the mass balances and the area around them clean. Follow the directions given by the instructor on the proper weighing technique to use. Otherwise, do not place chemicals directly on the balance pans; place a piece of weighing paper or a small container on the pan first, and then weigh your material. Never weigh an object while it is hot.
21. Do not heat graduate cylinders, burettes, pipettes, or bottles with a burner flame.
22. Do not look down into the open end of a test tube in which the contents are being heated or in which a reaction is being conducted.
23. Do not perform unauthorized experiments.
24. After completing the experiment, clean and put away your glassware and equipment. Clean your work area and make sure the gas and water are turned off. A clean lab is a safe lab.
25. Dispose solid waste such as filter paper, litmus paper, and matches in the wastebasket, not in the sink. Dispose broken glass in the broken glass waste boxes. Dispose all other solid chemicals as directed by your instructor. Pour all the toxic liquids into the waste bottles provided or as directed by instructor.

Lab Reports: Use the report form in your lab text. NEATNESS counts. Neatly remove the reports using the perforation provided. The Prelaboratory Assignment must be completed before lab and receive a stamp from your instructor. The remainder of the report is due one week after the experiment is complete. Lateness will be penalized. The report must be neat and in ink. No white-out of obliteration of mistakes. A simple strike through will be proper. Please record your name and section number. Staple the report together.

Guidelines for the Long Laboratory Report for Lab E10: ***Analysis of a Penny: Writing and Balancing Chemical Equations***

This report is due one week after the experiment, *3/10 for section 03 and 3/12 for section 04*. Late reports will receive a penalty.

The following outline indicates the minimum amount of information that should appear in your report. You may include additional information in the report. This report must be type written/printed and in a simple report folder.

1. Personal Information: Name, Course Name and Section Number, Instructor's Name

2. Title: Include the title of the experiment at the beginning of the report.

3. Objective: The objective should clearly state what are the key quantitative results that you are seeking in the experiment description of the experimental techniques used and any pertinent **mathematical and chemical equations** should be included here.

4. Table of Reagents/Hazards: This table includes chemical name, chemical formula, formula weight, melting point, boiling point, density, and health hazards such as LD_{50} and toxicity for each reagent used in the experiment.

5. Procedure: You have included the procedure in your laboratory notebook; therefore, there is no need to include the procedure here. Simply reference your lab notebook and the page numbers where the procedure can be found. You will be turning in the carbon copies from your notebook also.

6. Data and Calculations: Data should be listed in a table or tables. All data should be clearly labeled and should include the proper units of measurement. You may also be required to graph your results. The graph should be included in this section and all axes should be labeled with the proper units.

7. Calculations should be organized in a logical fashion and they should be clearly labeled. For each type of specific calculation you must show at least one sample calculation using your data. Make sure that appropriate units are also included in the calculations.

8. Sources of Error: Why the experiment did not produce the proper results or what difficulties your encountered.

9. Conclusion: Without exception all lab report conclusions are typed. These typed conclusions are turned in along with any graphs as well as copies of your laboratory notebook procedures, observations, data tables, and calculations. Also, since your lab report conclusion must be typed/printed, you will need to learn how to use superscript and subscript notation. For example, the chemical formula for magnesium phosphate is $Mg_3(PO_4)_2$ **not** Mg3(PO4)2.

The conclusion for each laboratory experiment will differ depending on the experiment; however there are always three main features that should be in the conclusion. First, your results should be presented as well as the expected or known values. You should include an explanation of any sources of errors that might explain why your results are different from the known or expected values. Finally, you should also include some discussion of the technique and theory that was used to perform the experiment and to explain the results. The conclusion is the most important part of the laboratory report!

This report must be submitted physically and not electronically.