General Chemistry Lab CHEM 1240 [Summer 2018]

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Lab: MTWR 10:30 – 1:30; Olin 235
Office Hours: TBD

Chemistry is a skill that nobody is born with. It is mastered only through years of repetition and practice. This lab represents the first small step towards the mastery of hands-on chemistry and lab-based science.

COURSE OBJECTIVES
After General Chemistry Lab, you should be able to do the following:

- **Carefully weigh solids to 1/100 of a gram**
- **Measure liquids using volumetric glassware**
- **Use basic lab instrumentation like thermometers, balances and simple spectrometers**
- **Write a complete lab report that follows that pattern of a scientific journal publication**

REQUIRED COURSE ITEMS

Notebook: You will be required to have a lab notebook that produces copies either carbonless or with carbon paper (available at DU bookstore) which will be used to record your data and observations. Your notebook will be graded and you must have your Teaching Assistant initial it at the conclusion of each lab exercise.

Calculator: An inexpensive calculator that has the capabilities for square roots, logarithms, and (exponential) scientific notation operations. The calculator will be used for homework and exams.

PRELAB ASSIGNMENTS. A prelab assignment will be due before each experiment. As part of the prelab each week you are required to write the procedure for that week's experiment in your laboratory notebook along with any safety guidelines and potential hazards given. Prelabs will be collected before the experiment. If your prelab is not complete, you will not be allowed to begin the experiment. THIS REQUIREMENT IS NOT FLEXIBLE. IT IS FOR YOUR PROTECTION AND THE OTHER STUDENTS IN THE COURSE. You must come to lab prepared and informed.

EXPERIMENTS. There will be a total of 8 experiments this quarter (see schedule). No student will be allowed to complete an experiment without following proper safety procedures including following safety protocol as it pertains to proper laboratory attire. You may not be allowed to begin an experiment if you arrive more than 30 minutes late for the scheduled lab time. You are required to do EVERY experiment. Makeup experiments will only be offered under extreme circumstances and require the lab instructor's permission ahead of time.

LAB NOTEBOOK. A lab notebook will be used to record important data for each experiment. The procedure for each experiment will also be written in the lab notebook so that the students are prepared before coming to lab. Notebooks will be graded primarily based on completion but points will be deducted if the instructor cannot read the handwriting. A complete lab notebook must contain the following for every experiment: **Date**, **Title**, **Purpose**, **Procedure** (including any **chemical reactions** and a table of relevant physical **properties** or **hazards** for chemicals used), and **Observations/Data**. Lab notebook pages are due with each worksheet.

WORKSHEETS. Students will complete a worksheet for each experiment this quarter. These worksheets can be found on the course Canvas page in the procedure for each experiment. Students are expected to turn in individual worksheets. Copying another student's work is considered academic dishonesty and will be taken seriously. Please refer to the University's honor code: http://www.du.edu/ccs/honorcode.html.

GRADES. Final grades will be determined according to performance on prelabs, experiment worksheets, lab notebook, and lab conduct/clean-up. There will be a maximum of 450 points for the course:

Component	Points
Prelab Assignments (10 points each)	80
Lab Conduct & Clean-up	10
Lab Notebook (5 points/experiment)	40
Experiment Worksheets (40 points each)	320
Total Points	**450**

LAB SCHEDULE (Report due dates in red)

DATE	EXPERIMENT	ASSIGNMENT
WEEK 1 –	**ATOMIC AND QUANTUM MECHANICAL MODEL**	
June 18	Introduction/Check In	
19	Experiment 1 - Silver nanoparticles: things too small to see	
20	Experiment 2 - Light and Structure of the Atom	Worksheet 1
21	Experiment 3 – Periodic Trends	Worksheet 2
WEEK 2 –	**MOLECULAR SHAPE, BONDING THEORIES, CHEMICAL REACTIONS, AQUEOUS CHEMISTRY**	
June 25	Experiment 4 – Exploring Molecular Geometry and Polarity	Worksheet 3
26	Experiment 5 – What's in a Name?… Chemical Formulae	Worksheet 4
27	Experiment 6 – Water, Water Everywhere… Solution Chemistry	Worksheet 5
28	No Lab	
WEEK 3 –	**IDEAL GASES AND THERMOCHEMISTRY**	
July 2	Experiment 7 – On the Lighter Side of Chemistry… Gases	Worksheet 6
3	Experiment 8 – Enthalpy of Neutralization	Worksheet 7
4	**JULY 4th HOLIDAY**	
5	Checkout	Worksheet 8