

Chemistry 112 Spring 2009

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Course Materials

Zumdahl, *Chemistry*, 7th edition

Greco, Rickard and Weiss, *Experiments in General Chemistry*, 9th ed.

Bound lab notebook (continue in 111 notebook)

Lab safety goggles or safety glasses with side shields

Calculator with **log**, **ln** functions and exponential (scientific) notation.

Tentative Schedule

Week of	Lecture/reading	Laboratory
1/12	Ch. 12 Chemical Kinetics	Kinetics: Expt 15
1/19		Expt. 15
1/26	Ch. 13 Chemical Equilibrium	Expt. 15 (section C: no lab)
2/2		Equilibrium constant: Expt. 16
2/9	Ch. 14, 15 Acids and bases	Le Chatelier principle: Expt. 14
2/16		Weak acid Expt. 19
2/23	Ch. 16 Thermodynamics	Buffers: Expt. 20
3/2	<u>Spring break</u>	
3/9		Qual 1: Expts 35, 36
3/16	Ch. 17 Electrochemistry	Qual 1
3/23		Finish Qual 1 and begin Qual 2: Expts. 33, 38
3/30	Ch. 18-19 Descriptive chemistry	Faraday const.: Expt 24
4/6		Qual 2
4/13	Ch. 20-22 as time permits	Penny: Expt 28
4/20		Finish Qual 2 and check out
4/27	<u>Finals week</u>	Final: Thursday 4/30 at 8:00am

Objectives

At the conclusion of Chemistry 112, the student should have a basic understanding of chemical kinetics and equilibrium thermodynamics, including electrochemistry and weak acid/base equilibria; have the ability to set up and solve quantitative problems in these areas; have a general knowledge of the descriptive chemistry of the elements, including carbon; and be proficient at fundamental qualitative and quantitative laboratory techniques.

Grading

Hour exams	35%	There will be 4 exams. Your worst exam counts 5%, the others 10% each.
Recitation	20%	Quizzes, problem sets
Final exam	20%	American Chemical Society standardized first-year chemistry exam
Laboratory	25%	Reports, quizzes, lab notebook as specified by lab instructor

Grades are not curved. There is no extra credit. Letter grade cutoffs:

A 93%, A- 90%, B+ 87%, B 83%, B- 80%, C+ 77%, C 73%, C- 70%, D+ 67%, D 63% D- 60%

Absence Policy

Absences are excused for a) personal illness, b) death or critical illness in the family, c) participation in a university-sponsored activity, d) jury duty, e) military duties, or f) religious holidays, if acceptable written documentation of the reason is provided. The instructor should be notified in advance of the absence, if possible.

You are responsible for arranging to make up work from any class or lab you miss, whether your absence is excused or not. Quizzes and exams may be made up, at the instructor's convenience, only if the absence is excused: you must give the instructor a typed or printed note on 8 ½ x 11 paper stating the reason for the absence, dates absent and your signature. Signature of an official (doctor, coach, etc.) must be included only if requested. Work must be made up within one week of your return, unless otherwise directed by instructor.

Academic Accommodations

Any student who has been approved for special academic accommodations through the Office of Learning Services should discuss this with the instructor during the first week of classes. The chemistry department cannot accommodate extra time/distraction-free testing. Students wishing to receive these must take tests in Lyle Hall and must complete all Learning Services requirements. If this is not done, the student will have to take the test with the class and will not be given extra time.

Office Hours

I hold 5 office hours per week. If they do not suit your schedule, we can arrange another time to meet. In addition, I will answer email questions about the material 7 days a week. However, I won't answer email requesting class notes, assignments or grades.

Your Job and Mine

It is my job to present the material of this course in a logical and understandable manner, along with some practice problems and labs to help you learn it. It is not my job to make it easy or entertaining (you should already be interested). In order to keep up at the level required, you will probably need to study many hours a week outside of class. Ultimately, it is your job to learn the material.

Chemistry 112 Laboratory

Instructor: Dr. Mark Iannone

Text: *Experiments in General Chemistry* by Greco, Rickard and Weiss (*GRW*)

Before coming to lab, read and understand the entire experiment (introduction and procedure). The purpose of lab is to give you practical experience, so pre-lab lectures will be as brief as possible. I'll assume that you have studied the lab already. Pre-lab quizzes may cover previous labs and the lab you are about to do. Prelab reports will be required in some cases.

Knowledge of the procedure, safe work habits and a serious attitude are absolutely required at all times in lab.

Please do not set up equipment, talk or make other noise during pre-lab lecture. It will be brief!

Occasionally I will need to make a short announcement during lab. Please pay attention and do not make noise during these brief interruptions.

At the end of lab:

- put away equipment and clean your area
- check blackboard for any reminder or announcement
- have instructor sign your lab notebook

Bound "QUAD RULED COMPOSITION" laboratory notebooks are required. Read the introduction (especially pages 10-13) in *GRW* for information on how to keep a lab notebook.

- You may have *GRW* out for the procedure but **do not write results in *GRW*; write them in the lab notebook.** No other papers or books should be on the lab bench.
- It is ok to use the lab notebook for notes on prelab lecture and for calculations.
- The lab book will provide data for writing the report and proof that you did the work.

The lab notebook will be graded.

1. Each used page must be numbered. Pages may not be skipped or torn out.
2. Write legibly in ink. Mistakes should be neatly crossed out; they must not be obliterated.
3. The title of the experiment must appear at the top of the first page used for that experiment. Recommended: prepare a summary of the procedure and tables to receive data.
4. I must be able to find the "raw data" for all experiments. Use tables when possible. Write all numbers with units and correct significant figures. For non-numerical observations, write a reasonably complete description.
5. Data must be in chronological order--it is not permitted to go back and write on a previous page.
6. Write the date at the end of your notes for each lab period. Resume on the next page.
7. Instructor's signature must appear for each lab period.

Eye protection must be worn at all times in the laboratory. Safety glasses with side shields or safety goggles are ok; prescription glasses are not. Do not use contact lenses in the lab.

Laboratory reports will usually be on forms from *GRW* or provided by instructor. Do not write on these forms during lab. Although partners will have the same data, reports must be written individually. Grading of lab reports is based upon

- Accuracy of results (especially in the case of unknowns),
- Correctness of calculations and significant figures,
- Answers to assigned questions, and
- Neatness.

Reports are due at the beginning of recitation the week after the experiment is completed. There is a penalty of 1 point (out of 15) per day late.

Laboratory safety rules

1. Knowledge of the procedure, safe work habits and a serious attitude are absolutely required at all times in lab.
 2. Eye protection must be worn at all times in lab. Contact lenses should not be worn in lab, even under safety goggles.
 3. Know the location and proper use of the eyewash, safety shower and fire extinguisher.
 4. Work in the fume hood if vapors or fumes could be produced.
 5. Food and drink may not be brought into the lab.
 6. Sandals and other open footwear are not permitted in lab.
 7. Loose clothing and long hair should be secured to avoid knocking things over or catching on fire.
 8. Dispose of chemical waste as instructed.
 - Most chemical waste will be placed in 5 gallon HAZARDOUS WASTE drums.
 - Some liquids may be disposed of in the sink, some solids in the trash, but only if so indicated by the instructor.
 9. Dispose of glass only in the container labeled "BROKEN GLASS."
 10. Do not light a burner near open containers of flammable solvents. Do not use a flame to heat flammable materials.
 11. Do not leave a lighted bunsen burner unattended. It could go out and allow gas to escape.
 12. Do not point the mouth of a test tube toward anyone, especially when heating, since reaction or boiling could cause the contents to shoot out.
 13. Never smell a chemical directly. If necessary, cautiously fan vapors toward your nose; never sniff from the container. Never taste anything in lab.
 14. Do not add water to concentrated acid; it can heat up and splatter. If it is necessary to dilute concentrated acid, add the acid to water instead.
 15. Do not attempt to force glass tubes, thermometers, etc. into rubber stoppers or hoses. See the instructor.
 16. Report any accidents to the instructor immediately.
 17. After lab, store equipment, clean your work area, then wash your hands thoroughly.
 18. Closely follow any additional safety suggestions supplied by the instructor.
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I have carefully read the laboratory safety rules and the syllabus and agree to abide by them. I understand that, for my own safety, I may be excluded from lab for violations.

Print name: _____ Course _____

Signature: _____ Date _____