

## Chem 1B Laboratory Policies Spring 2000

Dan Kimball 638-3641 ext. 3879

Kimball@ocsnet.net

<http://www.angelfire.com/biz2/kcmisc/chem1b>  
(case sensitive)

**TEXT/SUPPLIES:** Laboratory Manual to Accompany Chemistry 2nd Ed. by Radel & Navidi et al. Acceptable eye protection (required), scientific calculator, material for notes, lab coat or apron (optional).

**ATTENDANCE:** If you miss 2 labs in a row you can be dropped. Being late to class, leaving early, or not paying attention can be counted as an absence. Do not ask if it is okay to miss class. I will always tell you that it isn't. You can't learn chemistry if you are not here. In special circumstances you must talk to the instructor ASAP. You will lose 1 point for each time you are late or not in class the full time and 2 points for each absence. Missed labs must be made up promptly under the direction of the instructor.

**LABORATORY:** Each experiment takes 1 to 2 class periods and will require a prelab and lab report to be handed in. Each report is worth 10 points. The prelab should be completed before lab work begins. There is help for the prelab assignments on the internet web page above. The prelab and lab reports are handed in together by the end of the next class period after the experiment is scheduled to be completed. Late reports will lose 2 points. Safety glasses are required at all times or as directed by the instructor.

**GRADING:** Grading will generally be as follows and will constitute 25% of your overall grade in the combined lecture/lab class. You must pass the lab portion of the class to pass the complete course. Notes to study for quizzes can be found linked from the web page above.

- about 27% Laboratory Reports (10 pts each)
- about 73% Laboratory Quizzes (100 pts each)

**RESEARCH PROJECT:** Interested students may work on a research project. The proposal for your project must be submitted by the second quiz. This project will take the place of the last quiz and all the experiments related to it. It will be worth the same points as all the last experiments and the quiz plus some extra credit will be given. This is about 150 points. This is to encourage students to participate in the research

project concept. You can begin working on your project anytime, especially if you finish other experiments early. The time normally allotted to the final experiments and the last quiz will be available for work on research projects. The research project will be due close to the last lab period as shown on the schedule. Unlike other lab reports, this report must be very neat (typed) and in poster board format or written report. It should contain the following.

1. Topic, student name in prominent position.
2. Prior work and/or background based on literature search. A bibliography of at least 5 references must be included at the end. The bibliography should be in a standard format and complete enough for another person to find the information easily. All references should be cited in the body of the report.
3. Project goals or objectives.
4. Detailed description of your work including and explanation of what you did, equipment used, methods used, graphs or data/results, explanation of results, and conclusions. All must be typed neatly and graphs should be machine generated. The report should be of sufficient quality to present to a potential employer.
5. (optional) Suggestions for future work.

Grading will be based on the following (10 pts per category + 30 points extra credit):

TITLE/INTRODUCTION  
BACKGROUND  
HYPOTHESIS/OBJECTIVES  
PROCEDURES  
DATA/RESULTS  
CHARTS/GRAPHS  
CONCLUSION  
REFERENCES  
WRITING/CLARITY  
CREATIVITY  
NEATNESS/APPEARANCE  
RELEVANCE TO COURSE

### IDEAS FOR RESEARCH PROJECTS

1. The carbohydrate composition of citrus juices/fruit.
2. The acid content of citrus juices/fruit.
3. The essential oil content of citrus juices/drinks.
4. The bitterness in citrus juices/fruit.
5. The hardness of municipal water from various locations.
6. Heavy metal content in foods/beverages/water.
7. Gold content in jewelry/circuit boards.
8. Copper/zinc content in coins/circuit boards.
9. Calculations of weak acid titration curves.
10. Analyses of an unknown.
11. Salt content of various ocean/city water samples.
12. Fractional distillation of crude oil.
13. Production of fuel alcohol from organic material.
14. Nutritional content/analyses/labeling of foods.
15. Development of film. Making of holograms.
16. Synthesis of alum and the making of jewelry.
17. Amino acids in foods.
18. Preservatives in foods (benzoates/sorbates/sulfites/BHT).
19. Water content in foods.
20. Detecting colorants in foods.
21. Colligative properties (freezing point lowering/boiling point elevation) of antifreeze and various solutions.
22. Carbon dioxide production of yeasts/carbonate.
23. Analyses of cosmetics.
24. Optimizing buffer solutions.
25. Absorption spectra of select materials.

26. Optical activity of select materials.
27. Viscosity (rheological) properties of select materials.
28. Conductivity of select materials.
29. Chemical reactions in cooking of foods.
30. Effect of artificial sweeteners.
31. Disinfectants and toxins (in animals/plants).
32. Effect of various fertilizers on plants.
33. Chemical aspects of cement production and mixing.
34. Fluoride levels in toothpaste.
35. Determination of nitrogen in foods using Kjeldahl method.
36. Lab safety: chemistry and effects of fire extinguisher.
37. Lab safety: flammability of chemicals.
38. Lab safety: toxic gases.
39. Lab safety: effects of chemical spills/improper storage.
40. Lab safety: effects of natural disasters.
41. Basic properties for a class of compounds/elements.
42. Microwave absorption of various compounds/elements.
43. Diacetyl production/detection in foods.
44. Lead in Paint.
45. Chemical aspects of taste and smell.

Chemistry 1B Laboratory Schedule

Date	Lab Experiments and Activities	Assignments
1/10 Mon	Intro, Check-in, Safety (WOC1)	Safety, Checkin Sht
1/12 Wed	Unit 23 Clock Reactions (WOC 14)	-----
1/17 Mon	MARTIN LUTHER KING HOLIDAY	-----
1/19 Wed	Unit 24 Iodine-Peroxodisulfate	Lab 23
1/24 Mon	Unit 26 Equilibrium-IC of Wk Acid	Lab 24
1/26 Wed	Unit 27 Dtn of Formula for Cmpd	Lab 26
1/31 Mon	Unit 28 Measurement of Heat Changes	Lab 27
2/2 Wed	Unit 29 Galvanic and Elect Cells	Lab 28
2/7 Mon	Unit 31 Preparation of Aspirin	Lab 29
2/9 Wed	Review/Makeup Units 23-31	Lab 31
2/14 Mon	LAB QUIZ 1 (Units 23-31)	-----
2/16 Wed	Unit 35-Analytical Group 1	-----
2/21 Mon	Washington Day Holiday	-----
2/23 Wed	Unit 35-Analytical Group 1	Lab Group 1
2/28 Mon	Unit 35-Analytical Group 2	-----
3/1 Wed	Unit 35-Analytical Group 2	Lab Group 2
3/6 Mon	Unit 35-Analytical Group 3	-----
3/8 Wed D	Unit 35-Analytical Group 3	Lab Group 3
3/13 Mon	Review/Makeup Unit 35-Groups 1-3	-----
3/15 Wed	LAB QUIZ 2 Unit 35-Groups 1 - 3	Spec Prjcts Topics
3/20 Mon	Unit 35-Analytical Groups 4 & 5	-----
3/22 Wed	Unit 35-Analytical Groups 4 & 5	Lab Groups 4&5
3/27 Mon	Unit 35-General Unknown	-----

Date	Lab Experiments and Activities	Assignments
3/29 Wed	Unit 35-General Unknown	Lab General Unknown
4/3 Mon	Review/Makeup Unit 35-G 4&5, Gn Ukn	-----
4/5 Wed	LAB QUIZ 3 (Unit 35-G 4&5, Gn Unkn)	-----
4/10 Mon	Unit 33 Amino Acid Identification	-----
4/12 Wed	Unit 34 Analysis of Sugars in Foods	Lab 33
4/17 Mon	SPRING RECESS-NO CLASS	-----
4/19 Wed	SPRING RECESS-NO CLASS	-----
4/24 Mon	Unit 36 Gravimetric Detn of Sulfate	Lab 34
4/26 Wed	Unit 37 Detn of % Sodium Carbonate	Lab 36
5/1 Mon	Miscellaneous Lab Experiments	Lab 37
5/3 Wed	Miscellaneous Lab Experiments	-----
5/8 Mon	QUIZ 4 (Units 33, 34, 36, 37, Misc)	Special Projects
5/10	Clean up Projects	-----