

## COURSE: General Chemistry Lab II

Spring 2012

SECTION: Chem 1121-12 (CRN 1857)  
CREDIT: 1 hour  
LOCATION: prelab SSC E303, laboratory A304  
TIMES: 2:20 – 5:20 Thursday  
COREQUISITE: Chem 1120 lecture

### INSTRUCTOR

Dr. Ron Robertson  
Office: C303 Sundquist  
Office phone 221-6298  
Office hours posted but you are welcome to come by anytime  
Home phone 615-763-2146  
E-mail: [robertsonr@apsu.edu](mailto:robertsonr@apsu.edu) Message Board: <http://forums.apsu.edu/>  
Web site: <http://www.apsu.edu/robertsonr>

### TEXT

The experiments for this lab can be found at a link from the chemistry department website: <http://www.apsu.edu/chemistry/chem-1121-general-chemistry-ii>. It is your responsibility to print the required experiments before each lab.

### SUPPLEMENTARY MATERIALS

Safety goggles are required in the laboratory at all times. They must be *splash-proof* chemical goggles. It is your responsibility to purchase these goggles. They are available in the APSU bookstore, but they can be purchased at a lower price (but maybe less comfortable) at hardware stores, Bill's Wholesale, Harbor Freight Tools, etc. Rental goggles are available for \$1 per class session. No IOU's will be honored. You also will not be allowed to participate in lab if you are not dressed in an appropriate manner. (See the SAFETY section below)

A scientific calculator will be needed. For quizzes this calculator must be non-programmable. Cell phone calculators are also prohibited on quizzes.

### COURSE DESCRIPTION

Science is a process, a way of viewing and understanding the world. It is not just a body of facts. The knowledge we have has been obtained for the most part by experiment. So it is very important to allow you an opportunity to do some "hands on" work to understand this process we call science. Your work in lab will help you to develop the APSU general education core areas of reasoning, numerical understanding, and scientific knowledge. These areas relate particularly to the university's goals of student development in the following: skills of inquiry, abstract and logical thinking, and critical analysis; the ability to understand and use number and statistics; and an understanding of the scientific method.

This course presents laboratory activities designed to facilitate the understanding of material covered in Chem 1120. Our lab experiments cover topics such as molecular shapes, chromatography, colligative properties, kinetics, organic synthesis, acid/base equilibria, thermodynamics, and

oxidation/reduction electrochemical reactions. Word processing and spreadsheet skills will also be developed. A listing of our experiments for the semester is found elsewhere in this handout.

Any lab of this type is invariably of a "cookbook" nature at times. Try to look for ideas and concepts presented or visualized in the experiments. As you prepare for our quizzes, think about and summarize in your mind these ideas. The "Pre-Laboratory Assignment" and "Post-Laboratory Questions" in the lab handout for each experiment are excellent preparation and review. Please feel free to come to me for help.

## NUTS AND BOLTS OF EVALUATION

- a) You will receive one grade for this course (lab) and another grade for lecture. Unless repeating either lecture or lab you must be concurrently enrolled in both lecture and lab. The grades are independent of one another. We are in the process of upgrading the student requirements for lab work in general chemistry I and II so you may find that a little more work is required and at a higher level than previous semesters for this course. These additional requirements should result in an easier transition to our upper division chemistry courses.
- b) Most experiments will be worth a total of 40 points. Twenty points will be awarded based on your participation in the lab and the completion of the data sheets (including selected questions) for the experiment. Sometimes you will be allowed to take these home, complete them, and turn them in the next day by 3:00 p.m. or even by the next Monday. Other times you will have to turn in the lab sheet before leaving the lab. The report will be graded and will be available to you by Monday or Tuesday afternoon. *Please note that this policy may be different than the policy of other instructors.* Twenty additional points will also be awarded on the basis of a quiz which will be given at the beginning of the next lab. There will be no quiz for the last experiment "Equivalent Mass of Copper by Electrolysis".

The "Electrochemical Half Cells and Reactions" lab will be worth 60 points, 40 pts for the writing of a detailed lab report and 20 pts for the quiz the following week. The format and writing of this report will be explained later in the semester.

Your lowest 20 pt grade will be dropped. The 40 pt lab report grade on electrochemical half cells cannot be dropped.

- c) The Quiz: The main focus of the quiz is having an in-depth knowledge of the work done the previous week and having a general knowledge of the experiment to be performed the current week. The questions from the pre and post lab sections of the previous lab are excellent as a review for the quiz. The quiz will also contain questions pertaining to the assigned experiment for that day. All questions will be related to lab handout information and general knowledge from your lecture class.
- d) Attendance policy: No makeup labs will be given. Students must attend the section of Chemistry 1121 in which they are enrolled unless specific arrangements have been made with me as well as the other instructor.

You obviously must be in attendance in order to complete the lab experiments, and your grade depends on it. Please contact me when you cannot attend a lab. I am concerned when you are absent. If you miss a lab with a university excused absence (official representation for the university) you will be allowed to take (and are responsible for) the quiz given on the missed

lab day. It must be taken before the next lab period. You are also responsible for the quiz the next week over the lab material that you missed. You will receive as a grade for the 20 points of missed lab time/data sheets your average lab grade for the rest of the semester.

If you miss a lab for any other reason, that lab will be given a mark of zero for the 20 pt data sheet/participation grade. You are allowed to make up the quiz given on the missed lab day provided it is taken before the next lab period. You are also responsible for the quiz the next week over the lab material that you missed.

- e) Your course grade will be based on your point percentage of the total available. You are guaranteed the following marks: A 89.5%, B 79.5%, C 69.5%, D 59.5. Limited extra credit opportunities may be available and will be posted on the Message Board. There is no final exam.
- f) Although each student should hand in a separate data sheet or lab report, it is allowable to confer with others unless specifically indicated otherwise. This does not mean that you are allowed to copy material directly from another student or even your lab partner other than raw data collected in the lab. Points may be deducted if copying is found. Cheating on quizzes will not be tolerated. A grade of zero will be assigned for that quiz as a first step, and the matter will be referred to student affairs for further action.
- g) A mid-term grade will be awarded for all students in this course. The grade awarded may not necessarily be based on 50% of the course requirements and may or may not differ from the final grade. Your mid-term grade will be posted on APSU Self-Service.
- h) If you have a condition that may affect your academic performance, I encourage you to make an appointment with me or with the coordinator of disability issues (telephone 221-6230) in order to discuss this matter.

#### DROP/ADD DATES

I truly hope that you will not want to or feel the need to drop this course, but if you do . . . the following dates are important.

Last day to drop without a record	January 25
Last day to drop with an automatic "W"	February 22
Last day to drop with a "W, F, FA"	March 25

#### SAFETY AND CONDUCT

A safe and enjoyable lab experience is my goal. To participate in lab you must study and sign the document *General Chemistry Safety and Laboratory Rules*. You also must view or have viewed the safety video. The use of the eyewash, safety shower and other safety equipment will be explained on the first day of lab. Two general and important rules are: (1) "horseplay" in the lab cannot be tolerated, and (2) safety goggles (*splash-proof*) and appropriate clothing must be worn at all times. You will be warned of inappropriate behavior, and if your behavior does not improve, you will be asked to leave the laboratory. Students are expected to conduct themselves appropriately at all times. Academic and classroom misconduct will not be tolerated. Students must read the "Code of Student Conduct" in the Student Handbook for an understanding of what will be expected of them within the academic setting. Specific clothing requirements will be explained the first day of lab.

University policy concerning minors - According to APSU policy #3:032, minors (defined as those under the age of 18) are not allowed in classrooms. While I recognize that extenuating circumstances occur and make it difficult for some students to attend without bringing children with them on occasion, I must enforce University policy and thus will deny any request for a child in my classroom. You should also be aware that minors are not allowed in academic labs, computer labs, science labs, or the library. Further, children cannot be left in halls outside classrooms. Please be aware that the policy on unattended minors is for the purpose of ensuring that our classrooms are conducive to learning and for the safety and protection of minors. For additional information on minors on campus, contact the Office of Student Affairs in the Morgan University Center.

#### OTHER COMMENTS

I truly enjoy teaching chemistry and hope that we will have a profitable term. Please feel free to come by or call my office or to call me at home. Help with course material, discussion of career opportunities in chemistry, or "shooting the breeze" are all possible topics for discussion. Good luck!

## TENTATIVE SCHEDULE OF EVENTS

The following is a tentative schedule for lab. The experiments can be found at a link from <http://www.apsu.edu/chemistry>. Look at the navigation bar on the left side of the page to locate the labs. It is your responsibility to print each experiment.

Date	Expt. #	Experiment
Jan 12	1	Introduction; syllabus review; safety review
Jan 19	2	Molecular Models and Dipoles
Jan 26	3	Paper Chromatography of Food Dyes & Colors – Week 1
Feb 2	4	Paper Chromatography of Food Dyes & Colors – Week 2 (Inquiry experiment)
Feb 9	5	Synthesis of Aspirin & Oil of Wintergreen
Feb 16	6	Colligative Properties – Freezing Point Depression (Excel worksheet assigned)
Feb 23	7	The Iodine Clock – A Study in Kinetics
Mar 1	8	Determining the Equilibrium Constant of a Chemical Reaction
Mar 8	9	Spring Break – NO LAB
Mar 15	10	A pH Study of Acids and Salt Solutions
Mar 22	11	Buffer Action and Calculations
Mar 29	12	Determining the Identity of an Unknown Weak Acid
Apr 5	13	Solubility and Thermodynamics of Potassium Nitrate
Apr 12	14	Electrochemical Half Cells and Reactions (Long lab report required)
Apr 19	15	Equivalent Mass of Copper by Electrolysis

*A quiz will be given at the start of each lab except January 19.*

*The above schedule and procedures are subject to change in the event of extenuating circumstances.*