

Chem 151 GENERAL CHEMISTRY LABORATORY I (2 Cr. Hrs)

Syllabus of Summer 2009

INSTRUCTOR: Kit Mao (office: LS101F, mao@wustl.edu, office hours: WF 12 – 1 pm)

LAB LECTURE: Tuesday and Thursday 1:00 – 2:45 pm in Lab Sciences 301

TA: Barbara Gordon (LabSci 460, bsgordon@artsci.wustl.edu, office hours: TTh 12 – 1 pm)

LABORATORY: MWF (LabSci 330A, 1 – 5 pm) with the exception of Monday 6/15

TEXT: "2008-2009 General Chemistry Laboratory Manual" Washington University published. Sold in the Chemistry Store room located on the ground floor of McMillen Lab (Store hour: M → F 8:30 am – 4 pm)

COURSE DESCRIPTION:

This course is designed to be taken simultaneously with the first semester of the general chemistry lecture series (Chem 111A). It provides an introduction into basic laboratory techniques, the experimental method, and the presentation of scientific data, as well as direct experience with chemical principles and the properties and reactions of substances. The topics and experiments in this course complement the material covered in Chem 111A lecture course. Students attend a lab lectures per week and perform the experiments as scheduled. The experiments include:

Exp.1---Periodic Properties

Exp.2---Ion Exchange Reactions

Exp.3---Redox or not? How to Identify a Redox Reaction and Balance Redox Equations

Exp.4---The Relative Strength of Redox reactions

Exp.5---Introduction to Coordination Chemistry

Exp.6---Preparation, Purification and Spectroscopy of Complex Ions

Exp.7---Iron in Biology: The Iron Content in Ferritin, the Iron Storage Protein

Exp.8---Stoichiometry and the Gas Constant

Exp.9---Spectroscopy and Quantum Chemistry of Dye Molecules

Students are also expected to complete five tutorial assignments. The reading assignments can be accessed via the course homepage, www.chemistry.wustl.edu. Homework assignment will be distributed in lecture. Please refer to the course schedule for due date of each tutorial homework assignment. The list of tutorials is:

T1---What's in a name? The Nomenclature of Inorganic Compounds

T2---Bonds, Bands, and Doping: How so LEDs work?

T3---Hemoglobin and the Heme Group: Metal in the Blood for Oxygen Transport.

T4---Iron Use and Storage in the Body: Ferritin

T5---Gas Laws Save Lives: The Chemistry Behind Airbags

EXAMS: A mid-term exam and a cumulative final exam.

HOMEWORK:

Pre-lab assignments, Lab reports, and tutorial assignments should be submitted ON TIME. Points will be deducted for tardiness; 10 pts. for a late Pre-lab assignment/report and 5 pts. for a late tutorial.

LAB BEHAVIOR

Proper lab safety procedures must be followed at all times. Student could be dropped from the course for violation of lab safety rules. At the end of the semester, the TA will award 10 to 40 points to each student according to his/her lab behavior, such as punctuality, sense of responsibility, organization skill, preparedness, and understanding of the experiment.

GRADING: Follows the guidelines in Chem 151 Course Architecture listed in the Lab Manual

Summary of Responsibilities of Chem 151 Students (Summer 2009)

(Refer to Chem 151 COURSE ARCHITECTURE in Lab Manual for details)

1. Read the lab manual before coming to lab lecture. The lecture is presented in PowerPoint in which a copy of slides will be provided.
2. **Before coming to lab,**
 - i) Go to the course web and practice on the posted Pre-lab Practice. These practices will improve your lab efficiency and understanding in the laboratory.
 - ii) Complete the Pre-lab Assignment pages on the lab manual. These pages should be submitted to your TA before his/her pre-lab presentation. Be on time! A late pre-lab assignment will receive no credit.
3. **Wear goggles and proper attire (as is described in the lab manual) whenever you are in lab. If you wear improper attire, you will be sent home to change.** You may want to keep a set of proper attire in a hallway locker, which you may check out (from your TA) in the first lab.
4. Perform the experiments independently and in your fume hood. Record results in your lab notebook (refer to the instructions described in the COURSE ARCHITECTURE in the lab manual). At the end of the lab period, before leaving lab, you should submit a copy of your notebook pages to your TA and keep a copy for yourself. Lab reports should be submitted to the red slotted locker in the hallway before the end of the lab period. The grade for a late lab report will be reduced by 10 points; 5 points for late notebook pages.
5. **Write all reports and notebook pages in permanent ink; use a single line to strike out errors in writing; do not erase, white-out, or scribble through errors. All strike out errors must be remained legible.**
6. You are NOT allowed to stay in lab past your lab period. Therefore, it is your responsibility to ensure that you leave enough time for cleanup, whether you have finished the experiment or not.
7. At the end of the semester, your TA will award up to 40 points for your lab behavior, such as punctuality, sense of responsibility, preparedness, and understanding of the experiment.
8. Read the tutorial material and complete the tutorial homework assignments ON TIME. Turn in the tutorial assignments to the green slotted locker (located in the hallway) before 5 pm of the due day as indicated in the course schedule. The grade for a late tutorial assignment will be reduced by 5 points.
9. Late reports/tutorial assignments will NOT be accepted more than 24 hours after the deadline due time.
10. Plan to perform all nine experiments during this semester; your eight highest scores will count towards the course grade. In case of an absence, the missed experiment will be dropped. **If you miss two or more experiments/reports, it is likely that you will fail the course, regardless of the total points. Make-up labs are not possible.** Tutorial grades cannot be dropped.
11. The mid-term exam and the cumulative final exam are mandatory. Absence will be recorded as a “zero.”
12. All re-grade requests must be in writing, stapled to the first page of the exam/report/assignment, clearly indicating the reason for the request, and turn in to the re-grade locker within the same week that the report/tutorial assignment/exam is returned.
13. Plan to check out your lab drawers at the end of the semester. Failure to check out will result in an incomplete grade for the course. If you claimed a locker in the hallway, you should empty it and leave it unlocked at the end of the semester. Unclaimed materials will be trashed.

The Washington University policy on Student Academic Integrity applies at all times in this course. Violation of Academic Integrity will lead to a “F” grade in course disregard of student’s performance.

Chem 151 Course Schedule (Summer 2009)

Date	Day		Report Due	Tutorial Due
6/8	Monday	Lecture 1--- Course Introduction, Naming of Inorganic compounds		
6/9	Tuesday	Lecture 2--- Periodic Properties		T1
6/10	Wed.	Check-in and do Exp.1	R1	T2
6/11	Thursday	Lecture 3---Ion Exchange Reactions, Net Ionic Equations		
6/12	Friday	Do Exp.2	R2	
6/15	Monday	No lab		
6/16	Tuesday	Lecture 4&5---Redox Reactions, Balancing Redox Eqs		
6/17	Wed.	Do Exp.3	R3	
6/18	Thursday	Lecture 6--- More Redox Reactions; Midterm Review		
6/19	Friday	Do Exp. 4	R4	
6/22	Monday	Mid-term Exam (1-3 pm)		
6/23	Tuesday	Lecture 7&8 ---Introduction to Coordination Chemistry		
6/24	Wed.	Do Exp. 5	R5	T3
6/25	Thursday	Lecture 9--- Complex synthesis and Ferritin		
6/26	Friday	Do Exp.6	R6	
6/29	Monday	Do Exp.7	R7	T4
6/30	Tuesday	Lecture10--- Kinetic Molecular Theory and the Gas Law		
7/1	Wed.	Do Exp. 8	R8	T5
7/2	Thursday	Lecture11& 12--- Molecular Orbital Theory and Quantum Chemistry of Dye Molecules		
7/3	Friday	Independence Day (no class)		
7/6	Monday	Do Exp.9	R9	
7/7	Tuesday	Lecture 13--- Final Review		
7/8	Wed.	No lab		
7/9	Thursday	Final Exam (1-3 pm)		