Chem 152 GENERAL CHEMISTRY LABORATORY II Syllabus
Spring 2015

INSTRUCTOR: Dr. Alison Redden (office: LS101F; office hours: TuWTh 1:00 – 2:00 pm, or by appointment)
COURSE EMAIL ADDRESS: Chem152@wustl.edu
COURSE WEBSITE: Linked through Blackboard (http://bb.wustl.edu)
LAB LECTURE: Mondays at 12:00 pm and 2:00 pm (Sections 01 and 02)
LABORATORY (3rd floor of Lab Sciences Building):

<table>
<thead>
<tr>
<th>Lab Sections</th>
<th>Meeting Times</th>
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</thead>
<tbody>
<tr>
<td>A, B, C</td>
<td>Tu 8:00 – 11:00 am, 11:30 am – 2:30 pm, 3:00 – 6:00 pm</td>
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<tr>
<td>D</td>
<td>W 2:00 – 5:00 pm</td>
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<tr>
<td>E, F, G</td>
<td>Th 8:00 – 11:00 am, 11:30 am – 2:30 pm, 3:00 – 6:00 pm</td>
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<tr>
<td>H</td>
<td>F 2:00 – 5:00 pm</td>
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<tr>
<td>I</td>
<td>Sa 9:00 am – 12:00 pm</td>
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COURSE DESCRIPTION:
This course is a continuation of Chem 151 but has an emphasis on quantitative measurements in the chemical sciences. It is designed to be taken in parallel with the second semester of the general chemistry lecture series (Chem 112A) and provides laboratory experience. These topics and the associated experiments in the lab complement materials covered in Chem 112A. Students are expected to attend a lab lecture every week and perform the experiments as scheduled. The experiments include:

Exp.1---ERROR ANALYSIS: Illustrated by an Experiment to Determine the Gas Constant
Exp.2---INTRODUCTION TO QUANTITATIVE ANALYSIS: Determining the Density of a Solution
Exp.3---ACID-BASE EQUILIBRIA (I): Standardization of a NaOH solution and the Diffusion Rate of Hydrochloric acid
Exp.4---ACID-BASE EQUILIBRIA (II): Buffer Solution and Acid-Base Titration Curves
Exp.5---SOLUBILITY EQUILIBRIA: Determining Solubility Products
Exp.6---THERMOCHEMISTRY: Enthalpy of Reaction and Enthalpy of Formation
Exp.7---CHROMATOGRAPHIC SEPARATIONS and Determining Concentrations by Spectrophotometry
Exp.8---ELECTROCHEMISTRY (I): A Ferricyanide/Ferrocyanide Concentration Cell
Exp.9---ELECTROCHEMISTRY (II): A Redox Titration Curve
Exp.10---CHEMICAL KINETICS: Determining the Rates of Chemical Reactions

Students are also expected to read the tutorial assignments posted on the course website. The list of tutorials is:

T1---Gas Law Save Lives: the Chemistry Behind Airbags
T2---Maintaining the Body’s Chemistry: Dialysis in the Kidneys
T3---Acid Rain
T4---Blood, Sweat, and Buffers: pH Regulation during Exercise
T5---Phase Changes and Refrigeration: Thermochemistry of Heat Engine
T6---Nutrients and Solubility
T7---Improving Air Quality with Electrical Vehicles

EXAMS: Both the 200-pt midterm exam (March 18 at 6:30 pm) and the 200-pt cumulative final exam (May 4 at 8:00 am) are mandatory.

CALCULATORS: The following non-programmable electronic calculator models will be allowed on exams:

- TI-30 XS Multiview
- TI-34 Multiview
- TI-30Xa
- TI-30X IIs (solar)
- TI-36X

LAB ASSIGNMENTS: Each lab is worth 100 points total, and consists of a pre-lab assignment (30 pts), lab notebook pages (10 pts), and a lab report (60 pts). A 10-point penalty will be imposed for a late pre-lab assignment, a late report, or a set of late notebook pages. Although there are no makeup labs, the two lowest lab scores will be dropped for each student.
LAB BEHAVIOR: Proper lab safety procedures must be followed at all times. A student could be dropped from the course for violation of lab safety rules. At the end of the semester, the TA will award up to 20 bonus points to each student according to his/her lab behavior, such as punctuality, sense of responsibility, organizational skills, cleanliness, preparedness, and understanding of the experiment.

QUIZZES: A quiz will be online every week in which an experiment is running, from Sunday through Saturday. Although scores are obtained upon completion, these are not included in the course grade. However, taking the quizzes is highly recommended, as they provide a useful tool for self-assessment. Note that quizzes cannot be accessed after their corresponding experiments have concluded.

HELP SESSIONS: Help sessions will be held on Mondays from 5 – 6 pm in LS250, beginning Jan. 26. These will be led by two faculty assistants, Jeffrey Kallen and Matt Autry.

MENTOR OFFICE HOURS: Chem 152 course mentors will hold office hours Monday through Saturday to answer questions pertaining course materials. The times and locations of these office hours will be posted on the course website.

ETHICS: The Washington University policy on Student Academic Integrity applies at all times in this course. Evidence of cheating or attempted cheating will be forwarded to the Committee for Student Academic Integrity, and the committee’s recommendations will be followed. Please refer to the “Statement of Student Academic Integrity” on the Washington University Website at:

https://acadinfo.wustl.edu/WUCRSLFrontMatter/WebWUCRSLInfo_AcadIntegrity.htm

Academic integrity violations in Chem 152 include (but are not limited to) sharing or fabricating data/results and copying calculations or answers on lab assignments and exams.

GRADING: Course grades will be assigned based on the criteria below:

- A > 1020 total points (85%) and > 300 points on exams
- B > 840 total points (70%) and > 200 points on exams
- C > 600 total points (50%) and > 100 points on exams
- D > 480 total points (40%)

For laboratory safety policies and detailed course information, please refer to the Course Architecture at the beginning of the Chem 152 Lab Manual.
Summary of Responsibilities of Chem 152 Students
(Refer to the Chem 152 Lab Manual for further details)

1. Check and make use of the information on the course website linked through Blackboard (http://bb.wustl.edu). The Lab Exercise Sets and video demonstrations are often quite helpful.

2. Attend all lab lectures. Prior to coming to lecture, read the experiment and print out the lecture slides.

3. Before coming to lab, complete the Pre-lab Assignment in your lab manual. The Pre-lab Assignment page should be submitted to your TA before the TA pre-lab presentation.

4. Be on time! If you are more than one hour late, you may not perform the experiment, as it is unsafe for one to rush through the lab. You will not be permitted to stay in the lab past your lab period.

5. Perform the experiments independently and in your fume hood only. Record results in your lab notebook. Before leaving lab, submit a copy of your notebook pages to your TA and keep a copy for yourself.

6. Follow the proper lab safety procedures and wear proper attire in all laboratories, as is described in the lab manual. If you wear improper attire, you must return home to change before you may begin the experiment.

7. Write reports and notebook pages in permanent ink; use a single line to strike through errors; do not use pencils, red pens, or white out.

8. Turn in the lab reports to the red slotted locker (located in the 3rd floor hallway outside LS330) before 1:00 pm the following day. The grade for a late lab report will be reduced by 10 points.

9. Late reports will NOT be accepted after 5 pm on the Tuesday following the week in which the experiment is performed, because the grading keys/guidelines are typically posted on Wednesdays.

10. Plan to perform all 10 experiments during this semester; your 8 highest scores will count towards the course grade. Make-up labs are not possible. In case of an absence, the missed experiment(s) will be the dropped score(s). If you miss more than two labs/reports, you will not receive a passing grade in the course regardless of overall points.

11. Both the mid-term exam and the final exam are mandatory.

12. In case of a possible grading error, you may ask for a re-grade. All re-grade requests must be accompanied by the original document and a completed re-grade request form (found in the Appendix of the lab manual), and must be turned in to the re-grade locker before the stated re-grade deadline.

13. Plan to check out your lab drawers at the end of the semester. Failure to check out will result in a loss of all lab behavior bonus points 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.

Please refer to the Course Calendar (posted online) for the dates of all Lectures and Labs.