CHM 158 General Chemistry II Laboratory
Part of a five credit course
Winter 2010 Sections 10097 and 13407
Location: 230/240 HHS

Time: 10097  Wednesday, 1:30-4:30 pm
      13407  Tuesday, 8:00-11:00 am

Instructor: Joel W. Russell
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Office Hours: Mon. & Wed., 4:00-5:00 PM

Teaching Assistants: 10097 Deepthi Gundapunenisomeshwar & Smedley Tetteh
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Course Prerequisite: CHM 144 and 147 or 157

General Course Overview:
CHM 158 is a lecture-laboratory course that represents the second half of a two
semester course in general chemistry. This syllabus covers the laboratory portion of the
class. CHM 158 focuses on the factors that influence the rates, equilibrium and thermo-
dynamics of chemical reactions. Experiments are performed and reported in groups of
three or four students. Performance in this laboratory for each student contributes 20%
to the final score in CHM 158.

Course Documents:
Most of the information describing the course and the experiments is available on the
Moodle website associated with this class. In some cases, students are required to
print these documents and bring them to class (for example, the experimental data
sheets and grading forms). The Moodle website is at the address:
http://moodle.oakland.edu or https://moodle.oakland.edu/moodle/login/index.php

Required Materials:

Safety Goggles: Students must supply the own safety goggles available at the OU
Book Center. Safety glasses are not allowed.
Helpful But Not Required: Data analysis by the group is easiest if one group member can bring a laptop computer to lab. Departmental computers are available in 331-335 HHS for groups that don’t have a laptop computer available in lab.

Laboratory Groups: Lab groups of three or four students will be assigned on the first day of class. Every student is expected to make an equal contribution to the execution of the laboratory experiments and to the production of the reports. The instructor should be informed of any “free-loading” group members. Students will have an opportunity to rate the contributions of their team members. The average rating received by each student will partially determine the grade received by the student.

Make-up Laboratories: If you must miss a lab period you should go to the lab for the other section shown above on the other day for that experiment and if room permits you can make it up. (Thus if you miss a Tuesday morning lab you can go to the Wednesday afternoon lab. If you know you are going to miss a Wednesday afternoon lab, you can go to the same week’s Tuesday morning lab.) You will be allowed to do this only once. You should make every effort to attend every laboratory period. If extreme circumstances make it necessary for you to miss a laboratory, speak with the instructor as soon as possible. If you miss more than one lab period, you will be given a score of 0% for the laboratory missed.

Grading: Grades will be based on the total points earned by the student. The final percentage will be incorporated into the overall CHM 158 grade. Each group will turn in seven laboratory reports. These reports will be given one grade. The grades will then be individually adjusted for each group member based on the peer-evaluation scores. The first laboratory will not be impacted by peer evaluations. Labs 2-4 will have a 25, 50, and 75% peer impact factors, respectively. Labs 5-7 will have 100% peer impact factors. Lab reports are due at the beginning of the lab period following completion of the experiment. Late reports will have their total points reduced by 10% for each day late. (Note: 5 minutes late and 24 hours late both count as one day late.) Lab report grades will be posted throughout the term on the Moodle website. Students will be able to look at their graded reports in the laboratory but they will not be allowed to take them from the laboratory.

Academic Conduct Policy: Cheating on examinations, plagiarism, falsifying reports/records, and unauthorized collaboration are considered serious breaches of proper academic conduct. It is your responsibility to consult the instructor if uncertainty exists on what may or may not be deemed misconduct. Falsifying laboratory data or using the data of others is considered to be a serious violation of the academic conduct policy. The Oakland University policy on academic conduct will be strictly enforced with no exceptions. See catalog under Academic Policies and Procedures. Students found guilty of academic misconduct by the Academic Conduct Committee will receive a course grade of 0.0. Note: This grade is not just for the laboratory portion of the class but for the entire 5 credits of CHM 158.
**Safety Requirements:** This laboratory will strictly adhere to the code of safe conduct outlined in the *Oakland University Undergraduate Chemical Laboratory Safety Manual*. This manual is available on the Moodle Website for the laboratory portion of the course. Students are required to read and understand this manual. **Students must complete and pass the online safety quiz that is part of the Safety Manual prior to starting the first experiment.** Students that do not follow safe practices will be expelled from the course.

**Laboratory Waiver:** If you are repeating the course, you may be able to waive the laboratory portion of the current course. You may choose to use the laboratory scores from the first course if: (1) your average in the laboratory portion of that course was at least 75% and (2) you were enrolled in that course at Oakland University no more than three years ago. If you wish to apply for a laboratory waiver, you must complete a *General Chemistry Laboratory Waiver* form. These forms will be available at the first class section and should be completed then. The laboratory waiver form must be completed and returned to your current lecture instructor during the first week of the current semester. You must attend the laboratory portion of the course until the waiver is approved.

**Add/Drops:** The University add/drop policy will be explicitly followed. It is your responsibility to be aware of the University deadline dates for dropping the course. If you drop the class you must still check-out. **If you drop without checking-out you will be fined $25.**

**Special Considerations:** Students with disabilities who may require special considerations should make an appointment with campus Disability Support Services. Students should also bring their needs to the attention of the instructor as soon as possible.
Additional Information Regarding CHM 158 Laboratory

Group Learning

Much of the course work that you do will be done as a member of a team. You will be assigned to a team during the first laboratory period. It is important that you understand some of the goals and benefits of group learning.

A survey (American Society for Training and Development and the U.S. Dept. of Labor, 1988) of major businesses and industrial firms, concluded that if students are to reach the workplace well equipped to cope with the real world they must have the opportunity to learn:

- how to learn
- how to listen and communicate orally
- adaptability based on creative thinking and problem solving
- group effectiveness characterized by interpersonal skills and teamwork
- organizational effectiveness and leadership

These skills are among the things that you should learn in Chemistry 158, in addition to becoming familiar with the process of experimentation and learning some chemistry. Research has shown that most students learn better, develop interpersonal skills and enjoy a course more when it is conducted in a group learning environment. This does not mean that students simply work side by side on a problem, or the best student works while the others watch. Rather, a group that is functioning well will exhibit interdependence. Everyone contributes something to the group. The more effort that you put into the group, the more you are likely to be rewarded in terms of skills learned and, ultimately, in terms of your grade.

When people work in groups, it is important that they be able to communicate with each other without conflict. Sometime during the semester a group member may say or do something you disagree with or something that annoys another student. Please bear in mind that it is all right to be critical of ideas but it is not acceptable to be critical of the person expressing the idea. If you criticize the person it is almost certain to cause hard feelings and affect group functioning.

Try to avoid win/lose situations. The goal of this lab is to develop problem solving skills, not to engage in conflicts where the ideas of one person dominate. In the context of solving problems in the general chemistry lab, group members may feel temporarily perplexed and discouraged. It is important to know that being temporarily perplexed is a natural state of problem solving. If you know immediately how to solve a problem, then it is an exercise and not a problem.
WHAT YOU SHOULD DO

Before Lab

You need to be prepared. At a minimum you should:

- Study the relevant sections of this lab procedure and basic skills document and any other assigned reading material. You need to think about what you will do at each stage of the experiment as you read it. Note any questions you have or points of uncertainty. You should discuss these with your group members and if questions still arise with the instructor or teaching assistant. These labs are designed for you to “discover” many things so do not expect the instructor or teaching assistant to directly answer your question if they relate to something that you need to find experimentally.

- Listen carefully to any comments about future labs that the instructor or teaching assistant makes during laboratory discussion periods. Note you will not be told what to do for the experiments or what results you will find -- part of your job is to figure out these details.

- Complete the pre-laboratory assignment (in the lab manual). This must be turned in at the beginning of the laboratory period. This is how we know that you have prepared for the laboratory. If you do not complete your pre-lab before coming to lab, you will be asked to stay outside the lab until the pre-lab is completed and then you can only receive a maximum of 50% of the total pre-lab points. Note: the answers to the pre-lab will not be posted.

Students often find it helpful to work in groups when preparing for laboratory. Since how well you do depends, in part, on the data that your classmates collect, everyone benefits when their classmates are better prepared. If the objective of the lab or the background material is not clear, seek assistance before lab. Possible sources of assistance are your team members, other classmates, the instructor, and the teaching assistant. You may submit a single pre-lab sheet for your group. This sheet should show the names of all group members and the group number. If anyone disagrees with the answers on the group sheet, he/she may submit an individual sheet.

During Lab

Record all of your observations. Chemistry is an experimental science. If you do not record your observations you are not doing chemistry. This lab manual contains forms that you can use to record your data. If you don’t like these forms, you can prepare your own (make sure that you record all of the necessary data). Follow the correct laboratory procedures you learned in CHM 157 for recording data. (Use ink; do not erase errors but strike out with a single line so old value is still legible and write corrected value next to it; be neat so all data is legible; use proper number of significant figures; show units, etc.) At the conclusion of each lab period, you need to have your TA initial the data forms that you have completed (all of the data forms have a line for
Your data form should not be changed once your TA has initialed it. These experimental data (together with other data measured by the rest of the class) will form the basis for your post-lab report. Each team member should record all data on his/her data sheets. However, only one set of data sheets will be submitted with the group report.

**After Lab**

**Lab Report** Lab reports are due at the start of the lab period following the period of the post-lab discussion. Lab reports must be stapled in the upper left corner and include the following in the order shown:

1) grade sheet
2) pre-lab (if handed back)
3) data sheets
4) graphs
5) post-lab report
6) group member assessment sheets.

A single report may be submitted by each group and must show on the grade sheet page the names of all group members and the group number. If anyone disagrees with any part of the group report, he/she may submit an addendum to the report whose grade will replace that for the part in question of the group report. Addenda should be stapled at the back of the group report. For experiments with individual unknowns, the data sheets for the unknowns should be stapled at the back of the group report. Be sure these data sheets show your name and unknown number.

**Schedule of Experiments:**

Introduction and check-in: January 5 & 6

Experiment 1, Part I: January 12 & 13; Part II: January 19 & 20

Experiment 2, Part I: January 26 & 27; Part II: February 2 & 3

Experiment 3, Part I: February 9 & 10; Part II: February 16 & 17 (Lab practical exam)

Experiment 4, Part I: March 2 & 3

Experiment 4, Part II: March 9 & 10 (room 230); March 16 & 17 (room 240)

Experiment 5: March 16 & 17 (room 230); March 9 & 10 (room 240)

Experiment 6: March 23 & 24

Experiment 7, Part I: March 30 & 31; Part II: April 6 & 7 (Check out April 13 & 14)