CHM 104 Laboratory
Winter 2010

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Office Hours: by appointment
Lab Room: 230/240 HHS

CRN #  Day & Time:
11985  M 9:30-11:30 a.m.
11986  M 12:00 - 2:00 p.m.
11987  M 2:30 - 4:30 p.m.

REQUIRED:

* Students are required to print the Experimental Data/Observation Sheets and Post-
  Laboratory/Summary Sections for each experiment. The experiments used in CHM 104
  laboratory are available to you on the Moodle website associated with this class.  
  (https://moodle.oakland.edu)
* Safety Goggles or Glasses. These are available for purchase from the bookstore.

You are responsible for printing your own data sheets weekly and for supplying your own SAFETY
GLASSES. You will need to bring both the printed data sheets and safety goggles with you to
every class.

Experiment Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Exp.#</th>
<th>Experiment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/11</td>
<td></td>
<td>Introduction and Safety</td>
</tr>
<tr>
<td>1/25</td>
<td>Exp #1</td>
<td>Taking Measurements</td>
</tr>
<tr>
<td>3/1</td>
<td>Exp #2</td>
<td>Types of Reactions &amp; Stoichiometry</td>
</tr>
<tr>
<td>3/29</td>
<td>Exp #3</td>
<td>Equilibrium and Properties of Liquids and Gases</td>
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Attendance to all lab meetings is mandatory to receive points. Any Student who misses the first
lab meeting, laboratory Introduction and Safety, will receive a zero grade for the safety quiz.

Reminder, if you drop CHM 104 lecture you must also drop CHM 104 lab. You may not continue in the
lab if you drop the lecture.
Purpose: The laboratory component of this course is designed to reiterate the chemistry concepts learned in the classroom through hands-on experience. The labs will familiarize one with basic laboratory techniques and demonstrate how these basic chemistry concepts relate to everyday life.

I. Attendance:

Attendance is mandatory for all labs. No make-up lab time will be given. You are required to attend the section in which you are registered for. Only those students registered in a given lab section will be allowed to participate in the lab during its scheduled time. Attendance will be taken during each lab meeting. Make sure you check-in and are marked present. Students marked absent will receive a zero grade for that lab. Students who miss the first lab meeting, laboratory introduction and safety, will receive a zero grade for the safety quiz.

II. About the Lab:

- You will complete three (3) labs during the semester.
- You will be working with a lab partner for each of the labs.
  - This may require you to meet outside of the lab. Therefore, it is recommended (not required) that you choose a lab partner that is also registered in the same lecture class as you.
  - You should exchange contact information with your lab partner in case you need to get in touch outside of class.
- One lab report will be submitted per lab group (two students).

III. Safety:

Each student is required to read the *Oakland University Laboratory Safety Manual* that is available on the Moodle website for the laboratory (http://moodle.oakland.edu). Each student is required to take and pass the Laboratory Safety Quiz which is located in the Moodle website for the laboratory. Students who do not take and pass the safety quiz prior to the second lab meeting will not be allowed to work in the lab. This will result in a zero grade for each experiment missed.

IV. Laboratory Expectations:

**Before Lab:**

1. **Pre-lab assignment.** Each student is required to complete a pre-lab assignment. Each lab has a pre-lab assignment which can generally be found before the procedure section of the lab.

2. **Reading.** Each student should read the entire lab before coming to class. This includes the background information, procedure and post-lab questions. This will help you stay on track experimentally and easily answer the post-lab questions. Each lab will use the full time allotted for the labs. It is recommended that you wait to perform any calculations using your collected data until after all data has been collected. If you are not prepared and familiar with the days
experiment, you may not have sufficient time to finish the lab. No additional lab time will be
given.

The Day of the Lab:
1. Please arrive a few minutes early for lab. This will give you time to get yourself organized and
prepared for the lab. (Don't forget your safety goggles)
2. Each student must bring a completed pre-lab to class. The pre-lab is due at the beginning of
each lab period. You are expected to have the pre-lab completed before entering the lab. The
pre-lab must be initialed by the instructor to receive credit. If your pre-lab is not done or does not
have the required initials, you will get a zero for the pre-lab portion of that lab report. Both pre-lab
assignments are to be submitted with your lab report.
3. At the end of the day, all data MUST be initialed by the instructor. Data sheets without initials will
receive zero points for the data section in that lab report.
4. Grading sheet. It is the student's responsibility to obtain a report grading sheet. This grading
sheet is to be turned in with your lab report.

During Lab:
1. Safety:
   a. Safety goggles/glasses MUST be worn at all times in the lab.
   b. No open toed shoes or shorts allowed in the lab. You will be asked to leave the lab if you
      are inappropriately dressed. This will result in an unexcused absence in the lab.
   c. The use of cellular phones, MP3 players, or any other device that could distract you and
      compromise your safety or the safety of the other students is prohibited.
   d. No food or beverages in the lab.
2. Data:
   a. Record all data on original data sheets found in the lab. Data obtained in the lab
      must be recorded on your original data sheets. No scrap sheets will be allowed.
   b. Record all data using an ink pen. Pencils or erasable ink pens are not allowed. Only
      work completed in the laboratory must be recorded in ink. Pre-lab and Post-lab
      questions do not need to be completed in ink.
   c. Always use the proper number of significant figures.
   d. Always include units in any measurement.
   e. Errors:
      1. Any errors made in the lab should be crossed out with a single line and then the
         corrected data written next to the error. DO NOT SCRIBBLE OUT ERRORS!
         e.g. 0.0476 g 0.476 g
      2. Any data recording errors must be initialed by the instructor. Lab reports data sheets
         submitted with errors not initialed by the instructor will lose data points.
   f. Decimal numbers should include a zero in front of the decimal. (0.500 grams not .500
      grams)
3. Cleanliness:
   a. Please clean-up after yourself.
      1. Return your work area to the way it was when you entered the lab.
         i. Return all lab items to their proper location.
         ii. Wipe down your work area using a sponge at the end of the lab period.
         iii. Please use sponges to clean up water spills.
         iv. Close all containers/jars with chemicals that you have used when done.
   b. Balances and equipment
      i. Please rinse any glassware items with distilled water and then let air dry in lab
         kit.
ii. Please do not place WET items on balances.
iii. Clean balance area from all spills immediately.
iv. Please turn off the balance when you are finished using it.

V. Lab Reports:
1. Lab reports are to be turned into the Hannah Hall Stock room (243 HHS) within 72 hours of completing the lab. (e.g. If the lab meets Monday 10/5/09, then the lab report is due Thursday 10/8/09) It is recommended that you photocopy your lab report, so that if items are missing we can account for them immediately. Without a copy of submitted report, then you cannot receive points for any missing items.
2. One lab report will be submitted per lab group. (2 students/group)
3. Lab reports should include the following:
   Grade sheet (obtained during lab), 2 Pre-lab assignments (1 per student), data and observations sheets, and post-lab questions (Only 1 pre-lab will be graded)
4. Write your name, lab day & time, and lecture instructor on all pages.
5. Pages must be stapled in the order found on the Grading sheet. (5 point deduction for reports not stapled)
6. No photocopies or handwritten loose-leaf pages will be accepted.

VI. Grading:
Your lab grade will be based off of the points earned for the safety quiz (15 points) and the three lab reports (25 points each) that will be submitted throughout the semester. One lab report will be submitted for grading per group. Report grades will be posted on the Moodle website for this course. The due dates will follow the guidelines listed above. NO LATE LAB REPORTS WILL BE ACCEPTED. Lab reports submitted after the due date will receive a zero grade. Final grades will be forwarded to the lecture instructor and will be incorporated into your final CHM 104 grade.
Condensed Laboratory Safety Rules

Chemical laboratories are potentially dangerous. Strict adherence to safety is essential to accident-free operations.

The following basic rules are simple, common sense ways to avoiding accidents.

1. Wear safety goggles at all times no matter what you are doing.

2. Horseplay will not be tolerated.

3. Unsupervised work is strictly forbidden.

4. Report all accidents to your laboratory instructor at once.

5. Know the location of safety equipment, fire extinguishers, safety shower, eyewash station, fire blanket, etc.

6. Chemicals are to be handled with respect. Be familiar with the properties and hazards of any substance before you use it.

7. Handle glassware with care. Glassware cuts are the major cause of lab reported incidents.

8. Wear protective clothing. Bare feet and open toe shoes are not permitted.

9. Never light a flame until you are sure there are no flammables nearby.

10. Neatness reduces the number of accidents and is a prerequisite for good laboratory work. Clean up spilled chemicals, broken glass and floods at once.

11. Think! A conscientious and scholarly attitude is the best defense against all common laboratory accidents.

12. Safety and health information concerning specific chemicals used in this laboratory are available on Material Safety Data Sheets (MSDS’s). A complete set is available in the Chemistry Stockroom, 280 SEB.