Chemistry 1515L Week 2

Graduate Teaching Assistant

Contact Information

Lab layout and Safety info

General Chemistry Teaching Laboratories & Safety

During your first laboratory session your Teaching Assistant will lead you through the lab and discuss the layout and go through very important safety issues. You will then check in by being given a locker containing most of the equipment that you will be using during General Chemistry. The lab is a safe place as long as you are sensible, prepared for the experiments you are doing, and have respect for the chemicals and the other people you are working with.

The Laboratory

The main lab (rooms 6035 and 6037) are equipped with enough spaces and lockers to house 25 students safely with each student receiving a locker containing basic equipment. Each bench has a fume hood as well as a networked PC that is connected to the Microlab analysis box.

The Balance Room

Room 6035 is shared between the two labs and is home to analytical balances, several microwave ovens that are used in several experiments, as well as a networked laser printer that is used for printing data that you collect with LabWorks. Notice how clean it looks.
Lab Schedule From the Syllabus:

Lab schedule has been designed to account for the holidays observed during Fall 2010 semester

Laboratory Text:

“Catalyst; Laboratory Experiments for General Chemistry 1515L”

Wagner/Koknat

The student completes and hands in the report sheet at the end of each experiment. Even if you work in pairs each student must hand in their own report for grading.
From the Syllabus:

Safety Rules: The lab instructor will discuss safety rules & equipment.
1. Eye protection must be worn at all times in the lab. Safety glasses are required; regular glasses are not sufficient.
2. Students are required to wear lab coats while working in the lab.
3. Sandals or open shoes are not permitted. Firm shoes or tennis shoes are required.
4. No smoking, no eating, no drinking at any time in the laboratory.
5. Only authorized experiments may be performed.
6. Any accidents are to be reported immediately to the instructor.
7. Work areas are to be cleaned and student drawers are to be locked at the end of the period.
8. Waste disposal rules: Waste chemicals are collected in special containers on the supply desk.

You should by now have signed and returned a SAFETY AGREEMENT sheet

• Labs will be conducted in pairs, however you must hand in your own worksheet

• Reading the experiment before you come to lab helps you to be safe

You will need to bring for each lab:

• Goggles (Bookstore)

• Lab coat (Bookstore or YSU ACS Affiliates)

• Lab manual (Catalyst)

• YSU email account (in order to log in to lab computers)

• Paper towels

• Dishwashing gloves (recommended but surgical gloves available)
### Experiment 1: Density of Liquids and Solids

**Density of a material** = \( \frac{\text{mass of that material}}{\text{volume of that material}} \)

\[ D (\text{g/mL}) = \frac{M (\text{g})}{V (\text{mL})} \]

We measure mass \( M \) with an analytical balance:

We measure volume \( V \) with a graduated cylinder:

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### Experiment 1: Density of Liquids and Solids

**Part 1: Use of the Balance**

Three operations:
- **On** by pressing the horizontal bar down
- **Tare** (i.e. “zero”) the balance by pressing the “Tare” end of the bar
- **Off** by gently pushing the bar “up” from underneath

These things are expensive and delicate so please treat them carefully

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Experiment 1: Density of Liquids and Solids

Part 2: Density of an Unknown Liquid

- Use the measuring cylinder to **accurately** measure the volume of liquid
- Use the bottom of the liquid meniscus as the measuring point to read volume
- Place a piece of white paper behind the cylinder to help you see the volume
- Use the balance as before to get the required weights
- Calculate density of the unknown based on the measured mass and volume
- Place unknown liquid in the appropriate waste container

Part 3: Density of a Metal and a Glass

- Weigh the metal (and glass) sample accurately using the balance (to 0.001 g)
- Use the graduated cylinder to measure how much water the sample displaces (Archimedes principle) – this will be the volume of the sample.
- Calculate density of the sample based on the measured mass and volume
For Next Lab Session:

- Read the lab manual and the web page for the next experiment (*Percentage Composition of a Compound*) to see if there are any modifications or suggestions for that experiment.

- Bring goggles, lab coat, paper towels, dishwashing gloves.

- Email me with any concerns.