

CHEM 321 (Fall 2011)
Lab Reports and Notebooks

1. All students must use notebooks with self-duplicating pages. The UD bookstore carries Hayden-McNeil Student Lab Notebook with carbonless duplicate sets.

Please see the example Lab Notebook pages on-line.

2. *Before the lab starts*, you must have the following sections complete in your notebooks:

Title

Balanced reaction equation and mechanism (if applicable)

Reagent Table with the following columns:

| <u>Compound Name</u> | <u>Structure</u> | <u>F.W.</u> | <u>Amount</u> | <u>mmol</u> | <u>Equivalents</u> | <u>Physical Properties</u> |
|----------------------|------------------|-------------|---------------|-------------|--------------------|----------------------------|
|----------------------|------------------|-------------|---------------|-------------|--------------------|----------------------------|

Procedure (use the two-column format for procedure/observations, as in the sample lab report provided)

You will not be allowed to begin the experiment until all of the above sections are complete and checked by your TA.

3. *As you perform the lab*, the following sections of your lab report must be updated faithfully.

- -Amount in the reagent table: leave room to record the exact amount you used, with correct significant figures. This means you should leave room in your table to record this data, and that you should carry your notebook to the scale to immediately record your exact mass in it (and **not** on scrap pieces of paper, your hand, etc.)
- mmol and equivalents in the reagent table for each reactant or catalyst. 1 mmol = 1/1000 of a mole, and is a more convenient number to use for the small-scale reactions you will be performing. Equivalents are obtained by dividing the mmol of each reactant or catalyst by the lowest number of mmol reactant. By doing this, the equivalents reflect the mole ratio that the materials are combined in.
- -Observations. It should be clear which step an observation pertains to. Also, if any deviations to your pre-written procedure, you must record that as well.

4. *At the end of the lab period*, your duplicate pages will be torn out and handed to your TA before you leave.

5. Your complete lab write-up, including post-lab questions, is due at the start of your next lab period. You will turn in only the duplicate pages. In addition to the sections above that were already handed in, your report should include:

Calculations (yield, etc.) if applicable
Results & Discussion
Post-lab Questions

Included in your discussion should be an evaluation of how well the laboratory worked, what significant sources of error are present, and potential improvements). For example, measurement errors would normally not be mentioned unless you believe that you made an error larger than indicated in sigfigs. Human errors such as “I spilled some of my product” should obviously be recorded. Of particular interest are problems you can identify that potentially can be attenuated by a change in procedure. For example: if your reactant is volatile, but the reaction mixture is boiled in a beaker, the reaction may be improved by performing it in a reflux apparatus to prevent evaporation of reactant.

The points for each lab will be assigned as follows:

| | |
|----------------------|-------------------|
| Pre-lab Preparation | 10 points |
| Participation | 15 points |
| Observations | 15 points |
| Calculation | 10 points |
| Results & Discussion | 15 points |
| Post-lab Questions | 15 points |
| Selected Section* | 20 points |
| Total | 100 points |

* One unannounced section will be carefully graded for quality for each lab.

Lab safety: All students must wear appropriate personal protective equipment during all labs: safety goggles, gloves (provided), long pants/skirt, and close-toed shoes. Lab safety will be taken *very seriously*. You will be penalized if you neglect safety:

- For first offense of the semester: Lose 20% of the points for that lab.
- For second offense of the semester (not per lab) and beyond: Immediate dismissal from lab and loss all points for that lab.

Missed Labs: All laboratories must be attended. If you miss a lab for a reason that your Dean will vouch for, then your grade will be prorated. All other absences will result in a grade of zero for that day.

Late Lab Reports: Labs not turned in on time will be penalized 10% of the lab grade per day.