

**Introduction to Environmental Chemistry**  
**LAB**  
**CHEM 2240-2,3**  
**Spring Quarter, 2015**

**Instructor:** Dr. J. Alex Huffman  
**Office:** SGM 180  
**Contact Info:** phone – (303) 871-4404; email – [alex.huffman@du.edu](mailto:alex.huffman@du.edu)

**Class Time:** Thursday; Morning lab (Section 3) 9:00 – 12:00, Afternoon lab (Section 2) 2:00 – 5:00  
**Class Location:** Olin 235

**Graduate TA:** Marie Gosselin ([Marie.Gosselin@DU.edu](mailto:Marie.Gosselin@DU.edu))

**REQUIRED COURSE ITEMS**

**Notebook:** Lab notebook with perforated carbon-copy sheets  
**Lab manual:** All lab materials will be posted online via Canvas

**LAB MATERIALS AND REPORTS**

- Reading material for labs will be uploaded to Canvas approximately one week prior to the lab.
- Pre-lab assignments will be required for each lab and **must be turned in by 4 pm on Tuesday preceding the lab (in the box of Marie Gosselin in the Chemistry Office / Olin 202)**. Pre-labs may be completed on carbon-copy sheets or on loose paper.
- Post-lab reports will be due at the beginning of lab one week following the period when the lab was performed. The report for each experiment must be typewritten. Excluding the data, calculations, and graphs, the report should be a maximum of two single-spaced pages in length. Further details will be given on the first day of lab. The report shall include:
  - Title of the experiment
  - Your name and lab section
  - Date of experiment and due date
  - Introduction (statement of the problem and any applicable chemical equations)
  - Observations and data (carbon copy of in-class notes and observations must be included)
  - Calculations
  - Results
  - Discussion and graphs
  - Conclusions
  - Post-lab questions and exercises

Late reports will be penalized 30% if delivered to the GTA by Wednesday following the report due date (i.e. within one week), 60% if delivered Thursday or later the week following the report due date (more than one week). Reports will not be accepted if delivered more than two weeks after report due date.

**GRADING**

Total lab points = 900 points

Discretionary	20 pts	(assigned by GTA for good lab & safety practice, notebook & technique)
Pre-lab assignments	10 pts per lab	
Post-lab assignments	100 pts per lab	x 8 labs = 900 points

Note that ability to concisely and cleanly articulate your message will affect your grade. Messy, disorganized, confusing, and incomplete reports will receive lower points. Team work will also be critical. The GTA and professor each have discretion to levy point deductions if any lab rules are disobeyed or if individuals in a team are not pulling equal weight.

## **MISSING LAB**

No lab may be missed without a valid reason. If you will be out of town for a University sanctioned function (e.g. athletic team or music group), you are responsible for making arrangements with Dr. Huffman or GTA at a minimum of one week in advance of the lab period to be missed. Arrangements will be made on a case-by-case basis. If you are sick for a particular lab period you must email Dr. Huffman and the GTA before the lab period begins and you will need a doctor's note to be considered for credit for the lab. No make-up labs will be given for students without valid notation. If the particular lab affords the possibility it may be possible to make-up the lab the next week. If not, in some cases the grade will be adjusted out of 7 labs instead of 8.

Please be on time to lab. It is under the discretion of the GTA to keep you from starting the lab if you are late enough to provide distraction to other students or cause other complications with the lab.

## **PROBES AND METERS**

Certain labs may utilize ChemUSB CCD (charge-coupled device) spectrometers manufactured by Ocean Optics Inc., covering both UV and visible spectroscopy ranges. The USB in the name of the spectrometer refers to the fact that it will connect to your "laptop" computer via the USB port. Each student will load the software for the spectrometer on a laptop computer to be used throughout the course for both spectra acquisition and analysis. Assistance will be given during the first lab period. With this software you will operate the spectrometer, acquire data into your computer, and perform all necessary manipulations of the spectra. Each student should become familiar with the features of this software in order to optimize its use.

The pH meters will also utilize your laptop computer. Instead of writing down readings from the pH meter in your lab notebook, you will record the pH directly into your computer, using software that will plot the titration curve as you record the data. The system is made by a company called Vernier, the interface box is called LabPro and the software is called LoggerPro. Please be careful with the probes. You may be held responsible if you damage them through careless action.

## **SAFETY RULES**

Accidents can happen in any laboratory, even in laboratories staffed with highly experienced scientists. The potential for an accident in our laboratory is minimized by 1) advance planning, 2) careful attention to the details of your own work, and 3) an awareness of what other students are doing around you. If you have any questions, ask. That is what we are here for!

### **Lab Safety Rules (in effect at all times):**

1. No students are allowed in the lab unless the TA is present.
2. Only students assigned to that lab section are allowed in the lab.
3. After the TA pre-lab lecture, safety glasses must be worn at all times.
4. Protect your skin with proper attire. Wear 1) the gloves provided, 2) a sleeved shirt to protect your arms, and 3) long pants and closed-toed shoes.
5. You will not be allowed in the lab wearing shorts or open-toed shoes.
6. Coats should be stored on coat hooks or in packs. Packs should be stored to prevent trip hazards.
7. Absolutely no food or drink is permitted. Store water bottles out of sight in your pack.
8. No open flames.
9. Read and reread the label on a chemical container before using a chemical.
10. Never put chemicals back in the stock bottle.
11. Close all chemical containers immediately after use.
12. Clean up all chemical spills (bench, balance table, hoods) immediately.
13. Avoid contact of chemicals with your clothing.
14. Avoid breathing chemical fumes by working in the hoods provided.
15. Use the chemical disposal procedures specified by your TA.
16. No chemicals, glassware, or equipment are to be removed from the lab.
17. No unauthorized experiments.