Chemistry 231, Quantitative Analysis Laboratory  
Fall 2002

<table>
<thead>
<tr>
<th>Section</th>
<th>Time(pm)</th>
<th>Instructor</th>
<th>Phone Number</th>
<th>Office</th>
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<tbody>
<tr>
<td>61</td>
<td>1 - 4:50</td>
<td>Melissa Mertzman</td>
<td><a href="mailto:mel@drexel.edu">mel@drexel.edu</a></td>
<td>215-895-1702</td>
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<tr>
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Office hours available upon request.

**Course Objective**

This is a laboratory course whose primary objective is to introduce the classical “wet” methods of analytical chemistry. Nearly all of the term will be devoted to statistical treatment of experimental data, gravimetric, and volumetric methods of analysis. The accuracy and precision of the results obtained will be the primary focus.

**Required Course Materials**

- Bound Laboratory notebook
- Safety Glasses/Goggles
- Access to Microsoft Excel

It is essential that you purchase your own copy of the laboratory manual. Also, you must use a bound laboratory notebook with numbered pages.

**Tentative Grading scheme (± 5%)**

**Quizzes** 5 %  
There will be random pre-lab quizzes.

**Subjective Grade** 5 %  
This grade is based on promptness (arrives on time, finishes on time), preparation for lab, level of organization, ability to work independently, cleanliness of work area, analytical technique observed, and overall attitude.

**Laboratory Notebook** 30 %  
The student will write the following sections in his/her lab notebook prior to coming to the lab:
  a) Experimental Purpose
  b) Introduction/Theory
  c) Answers to Pre-Lab Questions
  d) Experimental Plan
The instructor will check the pre-lab requirements before the experiment is started. The Experimental Plan (d) must be written in the student’s own words and not merely copied from the lab book.

The sections below will be written in the notebook during the actual experiment.
   e) Experimental Observations
   f) Data

**Laboratory Reports 30 %**
One week after the experiment has been completed; the student will submit a lab report consisting of (in the designated order):
   a) Title Page
   b) Data Tables
   c) Data Analysis and Discussion
   d) Conclusions
   e) Answers to the Post-Lab Questions.

In addition, the student will e-mail the instructor an electronic copy of the Data Tables in a format designated by the instructor.

**Quantitative Unknowns 30 %**
A grade will be assigned based on the accuracy and precision of the results obtained.

**Safety**
All students must follow the Chemistry Department's Safety Rules for the Instructional Laboratory at all times. If you spill something, clean it up immediately. Food or drink is not permitted in the laboratory. Safety glasses are required from the moment the laboratory is entered. Make sure that all waste is disposed of properly.

**Laboratory Notebook Guidelines**
Please follow the instructions given in your laboratory manual or in the notebook guidelines handout.

**Completion of Experiments and Cleanup**
Students are expected to complete their experiments ten minutes prior to class end, and then to clean up their work areas before leaving the laboratory promptly by class end.

**Laboratory Assignment Due Dates**
Lab reports and electronic data are due no later than one week after the experiment has been completed [according to the schedule in the syllabus]. Late reports will receive a full letter grade reduction per week if no valid excuse can be demonstrated. The instructor is the judge of a valid excuse.

**Attendance**
There are NO make-up labs. If you cannot attend a scheduled lab or exam, you must notify me in advance. If no such notification is given beforehand and no valid excuse is given afterwards, you will receive a zero for the lab. The instructor is the judge of a valid excuse. Please note that proof of the validity of an excuse will also be required.
Order of experiments for Chem 231, Fall 2002 – Tuesday Sections

Week 1: Check in; discussion of safe laboratory practices

Week 2--Experiment #1: Volumetric Glassware & Data Treatment (p. 15)

Week 3--Experiment #2: Gravimetric Determination of Cl (p. 24)

Week 4--Experiment #4: Volumetric Determination of Chloride by Fajans' Method (p. 43)

Week 5-- Experiment #6: Volumetric Determination of Water Hardness (via EDTA titration) (p.55)

Week 6-- Experiment #7: Acid-Base Titration and Purity of Potassium Hydrogen Phthalate (KHP) (p.63)

Week 7--Experiment #10: Volumetric Determination of Iron (p.96)

Week 8--Experiment #9: Spectrophotometric Analysis: Determination of Mn in Steel (p.81)

Week 9--Experiment: Solid Phase Extraction (handout)

Week 10: Final exam; check out

Order of experiments for Chem 231, Fall 2002 – Thursday Section

Week 1: Check in; discussion of safe laboratory practices

Week 2--Experiment #1: Volumetric Glassware & Data Treatment (p. 15)

Week 3-- Experiment #4: Volumetric Determination of Chloride by Fajans’ Method (p. 43)

Week 4-- Experiment #2: Gravimetric Determination of Cl (p. 24)

Week 5-- Experiment #6: Volumetric Determination of Water Hardness (via EDTA titration) (p.55)

Week 6-- Experiment #7: Acid-Base Titration and Purity of Potassium Hydrogen Phthalate (KHP) (p.63)

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Week 8--Experiment #9: Spectrophotometric Analysis: Determination of Mn in Steel (p.81)

Week 9--Experiment: Solid Phase Extraction (handout)

Week 10: Final exam; check out