Recommended Text: Skoog, Holler, and Crouch, *Principles of Instrumental Analysis* 6th ed., Brooks/Cole Thompson, 2007 (same as the lecture). For this course, the text will be useful as a general reference on the methods we will be using (don't buy it if you don't have it). The primary source of information about the labs we will do is a set of web-based materials ([webnotes](#)) that are described below.

**Equipment:** You are required to have approved chemical splash safety goggles and must wear them whenever anyone is working with chemicals in the room you are in. I also recommend a lab apron or lab coat, since you will be handling strong acids and bases in this course. You will need a laboratory notebook for recording data (you can use the one that you used in CH 321). Notebooks are available at the bookstore and goggles and lab coats may be purchased at the chemistry stockroom. You will need the goggles and notebook for the second officially scheduled lab period.

**Make sure you attend lab the first week, or you may become disenrolled.**

**Preparation:** Before coming to lab, you must have read over the webnotes (see below) for the day's experiment and any applicable information in the text and have completed the Prelab spreadsheet (available on D2L in the Content section). Otherwise the TAs will be instructed not to let you begin experimental work. Unlike many of the labs you will take (but like the "real world") there are real dangers in this course that are minimized by proper preparation and comprehension of the task at hand. You should expect to spend all of the scheduled five hours in the lab, doing the experiments, analyzing the data, and beginning the preparation of the report.

**Spreadsheets:** As part of the preparation for lab, you will be required to prepare a data analysis spreadsheet in Excel or some other compatible spreadsheet program. You will find that this step streamlines and simplifies the data workup and makes report writing easier. There are several workstations available for your use in the lab; but if you have a laptop computer, it is useful to bring it to this class. (It should be possible to keep it away from the chemical hazards in the lab.) Graphical results will only be accepted in computer generated format (no graph paper) merged into the lab reports.

**Lab notebook:** You are required to keep a laboratory notebook throughout the term and will hand it in for a grade near the end of the quarter (see Grading section below). You will also need a synopsis of the procedure for each experiment to work from and spaces for the data and observations to be recorded. If your computer crashes (heaven forbid), you should be able to write most of the lab reports based on your notebook.

**Webnotes:** The webnotes are the lab manual in this class and are available anywhere you have access to a computer and the internet. The webnotes provide you with
specific information about the experiment that will be performed, as well as background on the methods and important safety information. You can print all of this information out on your computer at home and produce a “hardcopy” version if you wish, but I think you will find this to be unnecessary. In reading the webnotes, you can extract the essential procedural details and safety information for your notebook, while familiarizing yourself with the theory behind the experiment. Hint: since the webnotes are an electronic media, you can “cut’n’paste” information to build procedures, that can be printed and taped into your lab manual.

**Reports and Grading:** This laboratory is a University recognized writing intensive course (WIC). In addition to completing the labs and obtaining and evaluating results, you will be expected to describe your work in reports that are similar to scientific journal articles. The TAs, WIC assistant, and I will give you more information (and hands-on help if you need it) about the expectations of each lab report, as well as feedback on reports that have been submitted to help you improve. There are five graded reports: three major reports, worth **100 points each**, and two minor reports, worth **50 points**. The major reports are associated with merged two-week experiments and include optional partial reports to be submitted during the first week. All reports are submitted online using the D2L Dropbox tool. A small fraction of the points for each lab are awarded based on your successful completion of the experiment but your lab TA can choose to withhold any fraction of those points on any lab that you do not satisfactorily attend and participate in. Detailed rubrics are provided (in the Course Content section on D2L) for each report to guide your writing and to document our evaluation of your work. Late lab reports will not be graded, you will only receive the points for the completion of the lab and you will not be eligible for a rewrite. We will check your lab notebook at the end of the term (**10 points**); the TA will provide an assessment of your general preparation and lab technique (**50 points**); and your group members will provide peer evaluations at midterm and at the end of the term (**40 points**) to yield a total of **500 points possible**. Your grade will be determined by a normal curve (mean = B/C break) constructed from the total points obtained in the laboratory part of the class. There is no connection between the lecture and lab grades.

**Missed lab / tardiness policy:** YOU MUST TRY TO ATTEND ALL SCHEDULED LABORATORY MEETINGS. If you miss a lab you must notify your laboratory instructor as soon as possible, but well before the next laboratory period. The TAs have office hours and email addresses, so it is easy to contact them. There will be one make-up laboratory session at the end of the term. If you miss a laboratory meeting, you must make it up during the course or at the make-up lab. If you miss two or more labs, you will fail the course. Tardiness: If you are more than 15 minutes late to lab, you will be marked late, and may be told to leave, depending on how late you are. If you are repeatedly late, you will fail the course.