

CHEM430 Analytical Chemistry I

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Fall Term 2006
Office Hours: Th 5:00-6:00 p.m.
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Class Meetings: Th 6:00-8:50 p.m.

Class Room: Stratton 219

Textbook:

Douglas A. Skoog, F. James Holler, Timothy A. Nieman, Principles of Instrumental Analysis, 5th ed., Philadelphia, PA: Saunders College Publishing, 1998.

List of Topics:

Introduction to Analytical Techniques	chapter 1
Introduction to Optical Methods	chapter 13
Experimental Measurements & Statistics	chapter 1, appendix 1
Review of Electricity	
Basic Electronics & Electronic Test Equipment	chapter 2-3
Signals & Noise	chapter 5
Properties of Electromagnetic Radiation	chapter 6
Components of Optical Instruments	chapter 7
Molecular Absorption Spectroscopy	chapter 13
Atomic Spectroscopy	chapter 8-9
Molecular UV/visible Absorption Spectroscopy	chapter 14
Molecular Luminescence Spectroscopy	chapter 15
Infrared Absorption Spectroscopy	chapter 16-17

Proposed Schedule:

Nov 2	EXAM I
Nov 23	Thanksgiving Holiday (no class)
Finals week	EXAM II

Course Grading: 2 Exams (35% each for a total of 70%)
Problem Sets (several of which will total 30%)
Extra Credit Paper (topic must be approved by 11/3/06)

Note: Starting fall 2006, the new +/- grading system is in play.

Extra Credit Paper:

You may write an extra credit research paper that will be due the day of the final examination. After all of the problem sets and exams are graded and the final grades are assigned, I will read the papers and grade them on a scale of 0 to 10. An excellent paper can therefore boost you one full letter grade. Because I grade them after the final grades are assigned (from your exams and

problem sets), there will be no effect on your grade in the course even if everyone in the class writes a paper and you do not. The paper may be on any **analytical** subject, but I must approve it before you begin. For example, you can choose an analytical technique and write about the technique itself or the instrumentation used in performing the measurements. You may also choose a material and describe several different analytical techniques that can be used to measure some important property of the material. If you used an instrument on co-op and always wanted to know more about how it worked, or you are developing a process for your senior design project and know you need to use some analytical instrumentation there, this is your chance. I encourage you to use your textbook or issues of the journal *Analytical Chemistry* (in the library or electronically through the Hagerty library electronic journals page) to find a topic of interest to you. The first issue of the month of *Analytical Chemistry* contains a number of review articles written by experts in their field that would be appropriate starting places for the papers.

The papers should be 7 to 10 pages (single-spaced, with one-inch margins) in length and be written in an appropriate scientific style (i.e., using references). I expect to see good use of the scientific literature- you may use a textbook as a starting point, but you must use at least five primary references (research articles or monographs) in writing the paper. To ensure that you are making good progress on your report you must have the topic approved by November 3, 2006 and submit a list of references (bibliography) **electronically** through WebCT by November 24, 2006. The final paper must be turned in **electronically** through WebCT by the day of the final.

Please remember that plagiarism has many forms and is never acceptable.

Additional Reading:

Howard A. Strobel, William R. Heineman, Chemical Instrumentation: A Systematic Approach, New York: John Wiley & Sons, Inc., 1989.

H.H. Willard, L.L. Merritt, Jr., J.A. Dean, F.A. Settle, Jr., Instrumental Methods of Analysis, 7th ed., New York: D. Van Nostrand & Co., 1988.

G.D. Christian, J.E. O'Reilly, Instrumental Analysis, 2nd ed., Boston, MA: Allyn & Bacon, Inc., 1986.

D.G. Peters, J.M. Hayes, G.M. Hieftje, Chemical Separations and Measurements, Philadelphia, PA: W.B. Saunders Co., 1974.

These texts may be found in the Hagerty Library.

Recorded Lectures

The lectures for this class will be recorded; the screencasts will be made available on the lecture archive page available through the course homepage on WebCT. Every effort will be made to have the screencasts posted within 48 hours of the class. In some cases additional material will be assigned as recorded lectures only. You are responsible for the material presented in those lectures as well.

WebCT

We will be using WebCT (Drexel's on-line course tool package) to enhance communication in CHEM430. The instructions below tell you how to log on and begin using WebCT.

- 1) Login through DrexelOne at <http://one.drexel.edu>.
- 2) Enter your Drexel domain ID and password, click on **Login**.
- 3) Click on the **Student Services** Tab.
- 4) Click on the **My Courses** link.

or

- 1) Enter the Drexel WebCT Vista website directly at <http://vle.dcollege.net/>.
- 2) Click on the hyperlink for Drexel University.
- 3) Click on the **Log In** button.
- 4) Enter your Drexel domain ID and password, click on **OK**.

If you enter these correctly you will now be at your MyWebCT Home Page in the WebCT area. Select **CHEM430** from the list of courses in the center pane of the screen. You will now be on the course homepage. Select the **Bulletins** icon to read posted messages, the **Calendar** icon for the course schedule, etc. All of your in-class and homework assignments will be posted as assignments on the homepage.