

CHEM431 Analytical Chemistry II

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Winter Term 2007
Office Hours: Thu 5-6 pm, Fri noon-1:00 pm
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Lecture Meetings: Thu 6:00-7:50 pm
Lecture Room: LeBow 134

Lab Meeting: Thu 9:00 am -1:00 pm (sec 061)
Fri 1:00 pm -5:00 pm (sec 062)
Laboratories: Disque 406/409

Required Textbooks:

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

Donald T. Sawyer, William R. Heineman, Janice M. Beebe, Chemistry Experiments for Instrumental Methods, New York: John Wiley & Sons, 1984.

Lab Schedule (section 061):

Jan	11	Lab tour/practical		22	Lab
	18	Lab	Mar	1	Lab
	25	Lab		8	Lab
Feb	1	Lab		15	Lab
	8	Lab		22	Make-up week (finals week)
	15	Lab			

Lab Schedule (section 062):

Jan	12	Lab tour/practical		23	Lab
	19	Lab	Mar	2	Lab
	26	Lab		9	Lab
Feb	2	Lab		16	Lab
	9	Lab		23	Make-up week (finals week)
	16	Lab			

Lecture Topic Coverage:

* The chapters listed here are in the textbook by Skoog, Holler and Nieman.

Lab Lecture (LL): Data treatment

LL: Spectroscopy- UV/visible

LL: Spectroscopy- AA

LL: Spectroscopy- fluorescence

LL: Spectroscopy- FT-IR

LL: Electronics

LL: Chromatography- GC/MS

LL: Chromatography- HPLC

LL: Electronics/Electrochemistry

Optical Instrumentation (continuation of CHEM430)

Introduction to Chromatography

Gas Chromatography

High Performance Liquid Chromatography

chapter 25*

chapter 26*

chapter 27*

Planar Chromatography (paper, TLC)
New Chromatographic Methods

chapter 28*

Note about LL: I will strive to record the lab lectures for each of the individual experiments over the next couple of weeks; these will be in the form of a screencast available in Flash format. You will be responsible for viewing the LL prior to the day you are assigned to perform the lab. Further, you may be required to take and pass a short quiz on each lab (available electronically through WebCT) prior to the day of the lab.

Course Grading:

1 final exam, one or more problem sets, in-class quizzes	(total 25%)
8 laboratory reports (each worth 100 points), lab practical (25 points)	(total 75%)
Extra credit project	up to 10%

Note: The new +/- grading system is in play.

Results for the digital pipet calibration section of the lab practical **must** be turned in electronically via WebCT by 1/16/07, or you will lose one letter grade **for the course** for each week it is late. The other sections of the lab practical must be turned in electronically via WebCT by 1/18/07 (sec 061) or 1/19/06 (sec 062).

All experimental work **must** be finished prior to the end of the quarter. An incomplete in the course will only be given for writing up the lab reports. Exceptions to this rule will generally not be granted without significant extenuating circumstances; these exceptions **must** be requested in writing.

CHEM431 is officially specified as a *Writing Intensive Course*. While the course has always required comprehensive written laboratory reports, we must now include several written draft/critique/rewrite cycles for at least one of the writing assignments. Unlike other writing intensive courses, however, we *will not* be using a writing intensive tutor (WIT). For each of you the first laboratory experiment (conducted during the second week of the term) will be required to be written up as a *Full Report*. Your first draft must be submitted electronically via WebCT by Monday **1/29/07** (this gives you two weekends to work on the report). I will read your submission and provide comments back to you; if you wish to meet about your report we should schedule a meeting for sometime during the week of **1/29/07**. Your second draft is then due (also electronically through WebCT) by Monday, **2/5/07**. After a second critique the final draft is due for grading by Monday **2/12/07**. You should submit each of your other reports at weekly intervals (roughly 2-1/2 weeks after you perform the lab). All lab reports are due by the day of the final examination.

Extra Credit Project:

CHEM431 will likely take a good deal of your time, both in lab and outside. However, if you desire to earn extra credit we have a number of projects that you may work on. In many cases these are either modifications to existing labs or new labs that we wish to "try out" but have not found time ourselves. The amount of effort required is approximately that of performing a single lab experiment. It will include approximately 4 hours of laboratory work and a write-up of the results that you obtain in the *Full Report* lab report format. All extra credit laboratory work must be done before the end of the term. You should see me as early as possible in the term to set up the project if you are interested.

Additional Reading:

- H.A. Strobel & W.R. Heineman, Chemical Instrumentation: A Systematic Approach, 3rd ed., 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.

In addition to the general texts listed above there are a number of suggested readings for each experiment, as described in the *Supplemental Reading List* available on WebCT. You may wish to peruse a copy of the instruction/operation manual for the instrument you will be using prior to the lab period- you can read the copy located in the lab. You are responsible for having read this material **PRIOR** to entering the laboratory.

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 CHEM431. Note that the laboratory schedule (a list of what labs you will be doing what days) will *only* be distributed using the WebCT calendar. 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 **CHEM431** from the list of courses in the middle of the screen.