SYLLABUS
Chemistry 426/526  Instrumental Analysis Lecture
Winter Quarter 2009
MWF 2:00 – 3:05 p.m.  SB2-101

Instructor: Dr. Dean B. Atkinson
        SB2 - 476 (phone 725-8117, email atkinsond@pdx.edu)
        Web: Blackboard (or http://www.chem.pdx.edu/~atkinsdb/Teachweb.htm)

Office Hours:  MTW 9:30 - 10:30 a.m. (or by appointment)

Grading: Homework worth 50 points (5 sets x 10 points/set)
        Quizzes worth 50 points (best 5 x 10 points each)
        Two Midterm Exams (see schedule below) worth 100 points each
        Final Exam (Wednesday, March 18, 2009, 12:30 p.m.) worth 150 points
        Out of Class Participation Exercises / Teacher Evaluation worth 50 points

Grades are based on the total (out of 500) of the above categories. The following percentage
scores will guarantee the letter grade shown, however I may choose to revise the breakpoints
downward at my discretion and differentiate (+'s and –'s) within the letter grades:
        [(A) > 90%, (B) > 80%, (C) > 65%, (D) > 50%]

Schedule (subject to change, except exam dates)

M  Jan. 5    Introduction / Basic Electronics (V, I, R)
W  Jan. 7    Laws (Ohm, Kirchoff) / Power

M  Jan. 12   Calibration / Stand. Add. / Int. Stand./ Quiz 1
W  Jan. 14   Noise / LOD / Stats / QAQC
F  Jan. 16   Intro (Review?) to Electrochemistry

M  Jan. 19   Martin Luther King holiday - University Closed
W  Jan. 21   The Nernst Equation, Potentiometry
F  Jan. 23   Ion-Selective Electrodes

M  Jan. 26   Polarization / Amperometry / Voltammetry / Quiz 2
W  Jan. 28   Midterm 1 - in Class (60 minutes)
F  Jan. 30   Physics / Optics Review

M  Feb. 2    EMR / Detectors / Sources (inc. Lasers) / Quiz 3
W  Feb. 4    Spectrometer Design
F  Feb. 6    Absorption Spectroscopy, Beer-Lambert Law
M Feb. 9   Luminescence, Fluorescence, FT / Quiz 4
W Feb. 11  Atomic Spec. / Sources / Bandwidth
F Feb. 13  Atomization, etc.

M Feb. 16  Intro to Mass Spec. / Atomic vs. Molecular / Quiz 5
W Feb. 18  Physics Review / Mass Filters
F Feb. 20  Sources

M Feb. 23  Alphabet soup: SIMS, MS/MS, etc. / Quiz 6
W Feb. 25  Midterm 2 - in Class (60 minutes)
F Feb. 27  Chromatography Basics

M Mar. 2   GC and LC/ Quiz 7
W Mar. 4   Chromatography Detectors
F Mar. 6   Electrophoresis

M Mar. 9   Other Chromatographic Methods/ Quiz 8
W Mar. 11  Tandem Methods
F Mar. 13  Wrap-up / Review for Final

Wednesday, March 18, 2009, 12:30 - 2:20 p.m.  FINAL EXAM

THE TEXT is Principles of Instrumental Analysis 6th Edition by Skoog, Holler, and Crouch. This text fills in a lot of the holes from the text by Skoog that we used in Quantitative Analysis if you took it here. We will be skipping around a bit in the text and some material may come from other sources. I usually find that a good study technique is to quickly read over the sections of the text which will be covered before the lecture and then to read it again more carefully at some point afterward.

THE HOMEWORK will be graded for completion (essentially – did you do it?) and returned to you. I have no problem with students working together on homework, if everyone does their own work. Not doing your own work will probably result in poor performance on the exams and thus carries its own penalty. Late homework will be penalized to half credit, but ½ is better than zero!

THE QUIZZES will be administered weekly near the end of the class on Mondays, except for the first day and Martin Luther King Day, Jan. 19. These are simple qualitative checks (multiple choice) that you are keeping up with the reading and lecture material. There will be eight quizzes, five of which will be counted. If you miss class, you use a drop (no make-ups.)

THE MIDTERMS (2) will be in-class, 60 minute exams. You will be allowed to bring a one-page set of “crib notes” containing any information that you find useful.

THE FINAL will be two hours in-class. In this case you may bring two pages of notes. Note the drastic time change from our usual meeting slot.