SYLLABUS
Chemistry 320  Quantitative Analysis
Summer Session 2012 MTWR 2:15 – 4:20 p.m.
Academic and Student Recreation Center - Room 230

Instructor: Dr. Dean B. Atkinson
   SB2 – 476, atkinsond@pdx.edu
   Web: http://www.chem.pdx.edu/~atkinsdb/teach/320/ and Desire2Learn

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

Grading: Homework worth 60 points (online, explained below)
   Quizzes worth 40 points (Tuesdays, 10 points each)
   Weekly Exams (first three Thursdays) worth 50 points each
   Final Exam (Thursday, August 16, 2012, 2:15 p.m.) worth 125 points
   Participation Exercises / Evaluation worth 25 points

Grades are based on the total 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 (based on the curve) and differentiate (+’s and –’s) within the letter grades:
[(A) > 90%, (B) > 80%, (C) > 65%, (D) > 55%]

(The lecture schedule is below.)

THE TEXT is Fundamentals of Analytical Chemistry 8th Edition by Skoog, West, Holler, and Crouch. I realize it is an expensive text, but it is widely recognized to be one of the best and also is an excellent reference that will probably serve you well in your future career. The lectures are drawn fairly closely from the text to give you another resource for understanding the material. I think that a good study technique is to quickly read over the sections of the text that will be covered before the lecture and then to read it again more carefully and work through the examples at some point afterward. This will be especially true because we will be skipping around a bit in the text and the reading is pretty extensive.

HOMEWORK (Online at Sapling Learning) is graded on participation (you get 5 points per set that you attempt, even if you don’t get everything right) and is all done online. You can “turn in” the assigned homework anytime you want (but make sure you do the applicable homework before the exams). You will not need the Solutions Guide, since Sapling provides hints and explanations, along with the correct answer. (Sapling costs $25 and the Solutions Guide – which most people used to buy - runs about $40.) Since the homework grades are based on participation, you don’t have to fight the “getting exactly the answer the program expects” problem that some online homework tools have. And I have tried to set the tolerance loose enough that you can get the right answer (if you are doing the problem right). The big advantage of Sapling is there are a lot more problems available and you can repeat a problem with a different set of numbers, if you really struggled the first time through. And it’s available to you anytime when you have access to a computer or other web device. Go ahead and register yourself and get rolling on the homework sets as soon as you can.
THE QUIZZES will be administered weekly near the end of the class on Tuesdays. They are simple qualitative checks (five multiple choice questions) that you are keeping up with the reading and lecture material.

THE WEEKLY EXAMS will be in-class, 45 minute exams, followed by a quick 15 minute debrief and then a normal lecture (or vice versa). This is an efficient use of time (critical because of the compressed summer format) and also tends to decrease the nervous tension about performance. You will know immediately what the test was about, and – most likely – how well you did. You will be allowed to bring a one-page (one side of an 8.5 x 11 sheet of paper) set of “crib notes” containing any information that you find useful to each of the exams.

THE FINAL will be two hours in-class and will be comprehensive. In this case you may bring two pages of crib notes. If you remind me, I will provide last year’s midterms and final for you to study from before the tests. (Without keys!)

Schedule (subject to change, except exams and due dates)
Reading marked with an asterisk * should be primarily review.

M July 23    Introduction / Philosophy / Format / Lab / Statistics & Sampling
Reading: Ch.1, (2,3,4)*, 5
T July 24    Random Error (Uncertainty) / Probability and Statistics - 1 / Quiz 1
Reading: Ch.6
W July 25    Probability and Statistics – 2
Reading: Ch.6
R July 26    Statistical Analysis of Data / Weekly Exam 1
Reading: Ch. 7

M July 30    Statistics, Data Evaluation and Decision Making / Chemistry!
Reading: Ch. 7
T July 31    Aqueous Solutions / Acid-Base Titrations / Quiz 2
Reading: Ch.9*, 14*
W August 1   Activity Concept
Reading: Ch.10
R August 2   Intro to General Equilibrium Approach / Weekly Exam 2
Reading: Ch.11

M August 6   Applications of GEA
Reading: Ch.11/15
T August 7   pH measurement / Potentiometric Titrations / More Complex Eq / Quiz 3
Reading: Ch.15
W August 8   Polyprotic acids
Reading: Ch.15
R August 9   Complex Formation/EDTA Titrations / Weekly Exam 3
Reading: Ch.17
M  August 13  Complexometric Titrations  
   *Reading:* Ch. 17
T  August 14  Gravimetric/Argentometric Methods / *Quiz 4*  
   *Reading:* Ch. 9 (section 5), 12
W  August 15  Intro to Spectroscopy / Quantitative Spectrochemical Methods  
   *Reading:* Ch. 24

Thursday, August 16, 2012  **FINAL EXAM** (2:15 – 4:20 p.m.)