SYLLABUS
Chemistry 320  Quantitative Analysis
Fall Quarter 2012
MW 2:00 – 3:50 p.m.

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 **50 points** (10 sets @ 5 points/set)
Quizzes worth **50 points** (best 5 x 10 points each)
Midterm Exams (two - see schedule below) worth **100 points** each
Final Exam (Wed., December 5, 2012, 12:30 p.m.) worth **125 points**
Participation: OOCs / Clickers worth **75 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 which 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 are likely to 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 in the text and the reading is pretty extensive.

HOMEWORK (Online at Sapling Learning) is graded on participation, but is all done online.
That means you can do the assigned homework anytime you want, but you should do ALL of the
applicable homework before the exams! You will not need the Student Solutions Guide for the
text (~$40), since Sapling ($25) provides hints and explanations, along with the correct answer
for all of the problems. 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. I also try to set the answer tolerances “loose” enough that it will say you have the
right answer, if you are doing the problem right. The big advantages of Sapling are that there are
more problems available, they can be customized to fit the way I teach, and you can repeat a
problem with a different set of numbers, to be sure you “got it”. 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 right away.
CLICKERS a.k.a. a classroom response system, will be used to allow you to provide me with feedback about your level of understanding during class, instead of just during tests and quizzes. The platform we’ll be using is Turning Technologies Inc.’s Responseware OR the ResponseCard NXT: the first option is a software license that comes in lengths from 6 months (~$10) to five years that you can run on any device that can access the web, the other is a physical device that you can buy from the bookstore (~$45) and hopefully use in other classes. My plan is to give you 1 point for every question you get correct, but if we have access problems, I’ll go to a participation-based structure. You need to do one version or the other, but can wait until the first day of class to hear more about the two options (software vs. hardware).

THE QUIZZES will be administered weekly near the end of the class on Wednesdays, except on the days of the midterms, Oct. 17 and Nov. 14. They are simple qualitative checks (five multiple choice questions) that you are keeping up with the reading and lecture material. There will be eight quizzes, and the best five will count for your grade. If you miss class on a Wednesday, you use a drop (no make-ups).

THE MIDTERMS will be in-class, 60 minute exams, followed by a 45 minute debrief. I think this is an efficient use of time 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 midterms.

THE FINAL will be two hours in-class. In this case you may bring two pages of crib notes. Note the slight time change from our usual meeting slot. I provide previous year’s midterms and final for you to study. (Without keys!)

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

M Sept. 24 Introduction / Philosophy / Format / Lab / Statistics & Sampling
   Reading: Ch. 1, (2,3,4)*, 5
W Sept. 26 Random Error (Uncertainty) / Probability and Statistics - 1 / Quiz 1
   Reading: Ch.6

M Oct. 1 Probability and Statistics – 2
   Reading: Ch.6
W Oct. 3 Statistical Analysis of Data / Quiz 2
   Reading: Ch. 7

M Oct. 8 Statistics, Data Evaluation and Decision Making / Chemistry!
   Reading: Ch. 7
W Oct. 10 Review of Aqueous Solutions / Quiz 3
   Reading: Ch.9*, 14*

M Oct. 15 Aqueous Solutions / Acid-Base Titrations
**Reading:** Ch.9*, 14*

**W Oct. 17**  **MIDTERM EXAM** & Debrief

**M Oct. 22**  Activity Concept  
*Reading:* Ch.10

**W Oct. 24**  Intro to General Equilibrium Approach / **Quiz 4**  
*Reading:* Ch.11

**M Oct. 29**  Applications of GEA  
*Reading:* Ch.11/15

**W Oct. 31**  pH measurement / Potentiometric Titrations / More Complex Eq / **Quiz 5**  
*Reading:* Ch.15

**M Nov. 5**  Polyprotic acids  
*Reading:* Ch.15

**W Nov. 7**  Complex Formation/EDTA Titrations / **Quiz 6**  
*Reading:* Ch.17

**M Nov. 12**  Veteran’s Day – University Closed  
*Reading:* Ch. 9 (section 5), 12

**W Nov. 14**  **MIDTERM EXAM** & Debrief

**M Nov. 19**  Intro to Spectroscopy / Quantitative Spectrochemical Methods  
*Reading:* Ch.12

**W Nov. 21**  Introduction to Chromatography/Gas Chromatography / **Quiz 7**  
*Reading:* Ch.24

**M Nov. 26**  Liquid Chromatography, Electrophoresis  
*Reading:* Ch.30, 31

**W Nov. 28**  Review for Final / **Quiz 8**

Wednesday, Dec. 5  **FINAL EXAM** (12:30 – 2:20 p.m. - Note change from regular class time)