SYLLABUS
Chemistry 320 Quantitative Analysis
Summer Session 2015 MTWR 2:15 – 4:20 p.m.
Room TBA

Instructor: Dr. Dean B. Atkinson (Dr. A. or Dean)
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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 (online, explained below) worth **60 points**
Quizzes (Tuesdays, 10 points each) worth **40 points**
Weekly Exams (Thursdays, 50 points each) worth **150 points**
Final Exam (Thursday, July 17, 2014, 2:15 p.m.) worth **100 points**
Participation Exercises / Evaluation worth **50 points**
Grades are based on the total of the above categories with a maximum of 400 points possible. The percentage scores below will guarantee the letter grade shown, but 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(s) are Fundamentals of Analytical Chemistry 8th or 9th Editions by Skoog, West, Holler, and Crouch (Thomson/Cengage) or Quantitative Chemical Analysis 8th or 9th Editions by Harris (Freeman/Macmillan, Inc.). I switched to Harris last summer, but I didn't like it as well as Skoog. Honestly though, the texts are pretty similar and either one would work just fine. They are both an expensive texts, which is why I worked with Sapling to offer the used version of Skoog (packaged with the online homework for $115) that is available from the direct ordering site at http://www.saplingplusbooks.com/#!analytical-chemistry/cq23. (There are also etexts and rentals available at Chegg.com, but most people seem to prefer a hardcover book that they can keep.) 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 example problems) 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 relative to General Chemistry. In any case, try to get on the online homework as soon as you can after the material is covered in the lecture.

THE HOMEWORK (Online at Sapling Learning) is all done online and is graded on participation (you get 5 points per set that you attempt, even if you don't get everything right). You can do the assigned homework anytime you want, but you should do the applicable homework before the exams. 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 set the tolerance "loose" enough that you can get credit if you are doing the problem right. The big advantages of Sapling are: there are a lot of problems

available, it's not tied to a particular text, you can repeat a problem with a different set of numbers, it provides instant feedback and hints, and it's available to you anytime via the web. Register yourself and get rolling on the homework sets as soon as you can.

THE QUIZZES are administered weekly on Tuesdays, usually near the end of the class. They are simple qualitative checks (five multiple choice questions) that you are keeping up with the reading and lecture material.

THE WEEKLY EXAMS are 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 EXAM is two hours in-class and will be comprehensive. In this case you may bring two pages of crib notes.

SAMPLE EXAMS weekly tests and finals are available on D2L for you to study and I can provide more on request via email. I never provide answer keys, but you are encouraged to develop a consensus key with your classmates and I am happy to review worked versions of the sample exams during my office hours.

DRC ACCOMODATIONS should be identified via an email during the first week of the term, but I am eager to work with people to provide the best support we can for your learning. For testing accommodations, you are required to schedule all four tests to overlap with the testing in the lecture; optimally during the first hour of the class period for the first three weeks, so you can attend the test debrief that follows the three weekly exams. You also have the option of scheduling testing times for the Tuesday quizzes (optimally right after class) or taking the quizzes in the lecture. It behooves you to schedule all of the times ASAP, if you are going to use the Testing center.

Schedule **(subject to change, except exams and due dates)**

Reading marked with an asterisk * should be primarily review.

M June 22 Introduction / Philosophy / Format / Lab / Statistics & Sampling
Reading: Harris Ch. **0 – 2*, 3** // Skoog Ch.**1**, **(2,3,4)***, **5**

T June 23 Random Error (Uncertainty) / Probability and Statistics - 1 / **Quiz 1**
Reading: Harris Ch. **3** // Skoog Ch.**6**

W June 24 Probability and Statistics – POGIL exercise
Reading: Harris Ch. **4** // Skoog Ch.**6**

R June 25 Statistics, Data Evaluation and Decision Making / **Weekly Exam 1**
Reading: Harris Ch. **4** // Skoog Ch.**7**

M June 29 Aqueous Solutions / "Simple" Acid-Base Titrations
Reading: Harris Ch. **6.1, 6.5-6.7, 10.1-10.3*** // Skoog Ch. **9*, 14***
T June 30 Activity Concept / **Quiz 2**
Reading: Harris Ch.**, 7.1-7.3** // Skoog Ch. **10**
W July 1 General Equilibrium Approach / POGIL exercise
Reading: Harris Ch. **7.4, 7.5** // Skoog Ch. **11**
R July 2 Applications of GEA to Monoprotic acids –/ **Weekly Exam 2**
Reading: Harris Ch. **7.4, 7.5** // Skoog Ch. **11**

M July 6 Multiprotic acid systems/ Potentiometric Titrations
Reading: Harris Ch. **9** // Skoog Ch. **15**
T July 7 Polyprotic acid – POGIL exercise / **Quiz 3**
Reading: Harris Ch. **9** // Skoog Ch. **15**
W July 8 Complex Ions
Reading: Harris Ch. **6.4, 11.1** // Skoog Ch. **17**
R July 9 EDTA Titrations / **Weekly Exam 3**
Reading: Ch. **11.2** // Skoog Ch. **17**

M July 13 Gravimetric/Argentometric Methods
Reading: Harris Ch. **26.1-26.4** // Skoog Ch. **12**
T July 14 Intro to Spectroscopy / **Quiz 4**
Reading: Harris Ch. **17** // Skoog Ch. **24**
W July 15 Quantitative Spectrochemical Methods
Reading: Ch. **18** // Skoog Ch. **24**
Thursday, July 16, 2014 **FINAL EXAM** (2:15 – 4:20 p.m.)