CHM 4130, INSTRUMENTAL ANALYSIS
Fall, 2012, M,W,Th, 9th Period

Instructors: Dr. Kathryn R. Williams; krw@chem.ufl.edu; 392-7369
Office Hours: M,5th; T,8th; W,5th; Th,4th; F,3rd; CLB 220

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Objectives: CHM 4130 is a survey of the broad range of instruments available to the chemist, including internal function, applications, and limitations. Students may obtain hands-on experience with many of the instruments in CHM 4130L, which may be taken simultaneously with or after completion of CHM 4130.

Text: Skoog, D.A.; Holler, F.J; Crouch, S.R. *Principles of Instrumental Analysis*, 6th Ed; Thomson Brooks/Cole: Belmont, CA, 2007.

Resources: There is a sizable collection of texts on reserve under CHM 4000L in the Marston Science Library. Probably the most important of these is Harris, D.C. *Quantitative Chemical Analysis*, 8th Ed; W.H. Freeman: New York, 2010, which will be heavily used as a resource for chemical separations. Dr. Williams will also have class notes available in her office.

Grade Distribution:

Exams (3 @ 100 pts)		300
Quizzes (3 @ 40 pts)		120
Written Assignments (2 @ 25 pts; 1 @30 pts)	80	
Total		**500**

Grading Scale: Grades will be assigned according to the following point totals:

>450, A	425-449, A–	400-424, B+	375-399, B	350-374, B–
325-349, C+	300-324, C	275-299, C–	250-274, D+	225-249, D

Note: Chemistry majors earning grades below C (i.e., C–, D+, D, or E) must repeat the course to earn credit toward the degree.

Exams and Quizzes:
For exams (entire class period) and quizzes (20 min) each student may bring one 8.5"x11" sheet of paper containing (both sides) any desired handwritten information.

Assignments: Solutions to homework assignments are expected to be individual efforts. Students may obtain help from Dr. Williams, the TA, or any library/web reference materials.

Students with Disabilities: Appropriate accommodations will be provided, according to the policy at www.chem.ufl.edu/~itl/disabilities.html.

Academic Honesty: Students are expected to obey the University of Florida Honor Code, detailed at www.chem.ufl.edu/~itl/honor.html. Violations will be reported to the Office of Student Judicial Affairs.

Lecture Schedule

Week	Topic(s)	Chapter(s)	Special Dates
8/~~20~~,22,23	Fundamental Concepts; Quantitation	1	
8/27/29/30	Basic Electronics; Signal/Noise	2,3,4,5	
9/3,5,6	Chromatographic Methods; GC	26,27 & Harris 23,24	Problem Set 1 due Wed.9/5
9/10,12,13	GC; HPLC	27,28 & Harris 24,25	Quiz 1, Mon.9/10
9/17,19,20	Supercritical Fluids; CE	26	
9/24,26,27	Flow Injection Analysis; Microfluidics	33	Exam 1, Thurs.9/27
10/1,3,4	Optical Spectroscopy; Atomic Absorption	6,7,8,9	
10/8,10,11	Atomic Emission; Molecular Absorption	10,13	Problem Set 2 due Thurs.10/11
10/15,17,18	Molecular Absorption; Fluorescence	13,14,15	Quiz 2, Wed.10/17
10/22,24,25	Fluorescence; IR; Raman	16,17,18	Exam 2, Thurs.10/25
10/29,31;11/1	Surface Methods; Microscopy	21	
11/5,7,8	Electrochemistry; Potentiometry	22,23	
11/~~12,~~14,15	Coulometry; Voltammetry	24,25	
11/19,~~21,22~~	Voltammetry	25	Quiz 3, Mon.11/19
11/26,28,29	Mass Spectrometry	20	Problem Set 3 due Thurs.11/29
12/3,5,~~6~~	Atomic Mass Spectrometry	11	Exam 3, Wed.12/5