

CHM 4130, INSTRUMENTAL ANALYSIS

Fall, 2013, M,W,F, 2nd Period

Instructors: Dr. Kathryn R. Williams; krw@chem.ufl.edu; 392-7369
Office Hours: W, 6th; Th, 9th; 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.

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

Harris, D.C. *Quantitative Chemical Analysis*, 8th Ed; W.H. Freeman: New York, 2010.

Grading: There will be 7 in-class tests on the days designated on the schedule. The lowest test grade will be replaced by the highest test grade. A missed test will be considered as the lowest. There will be three problem sets containing a selection of practice problems (not turned in) plus a few problems to be submitted on the designated dates. The points will be distributed as follows:

Tests (7 @ 75 pts)	525
Written Assignments (3 @ 25 pts)	<u>75</u>
Total	600

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

>540, A	510-539, A-	480-509, B+	450-479, B	420-449, B-
390-419, C+	360-389, C	330-359, C-	300-329, D+	270-299, 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.

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. Please write on one side only (pencil is OK).

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
8/19,21,23	Fundamental Concepts; Quantitation	Harris 5	
8/26/28/30	Basic Electronics	Skoog 2,3,4	Fri, 8/30, Test 1
9/2,4,6	Signal/Noise; Intro Chromatographic Methods	Skoog 5; Harris 22	
9/9,11,13	Chromatography; GC	Harris 22,23	Fri, 9/13, Test 2
9/16/18/20	GC; HPLC	Harris 23,24	Fri, 9/20 Problem Set 1 due
9/23,25,27	HPLC	Harris 24	Fri, 9/27, Test 3
9/30; 10/2,4	CE; Intro Optical Spectroscopy	Harris 25,17 Skoog 6	
10/7,9,11	Optical Spectroscopy	Harris 19	Fri, 10/11, Test 4
10/14,16,18	Atomic Spectroscopy	Skoog 10 Harris 20	
10/21,23,25	Fluorescence	Harris 17	Fri, 10/25, Test 5
10/28,30;11/1	IR; Raman; SPR	Skoog 16,17,18 Harris 19	Fri, 11/1 Problem Set 2 due
11/4,6,8	Electrochemistry; Potentiometry	Harris 13,14	
11/11,13,15	Coulometry; Voltammetry	Harris 16	Fri, 11/15, Test 6
11/18,20,22	Voltammetry; Mass Spectrometry	Skoog 20 Harris 21	
11/25,27,29	Mass Spectrometry	Skoog 20 Harris 21	Mon, 11/25 Problem Set 3 due
12/2,4,6	Atomic Mass Spectrometry	Skoog 11	Wed, 12/4, Test 7