

CHM 3120 ANALYTICAL CHEMISTRY I

Summer 2013 - 3 credits

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Text: "Quantitative Chemical Analysis," Daniel C. Harris, W. H. Freeman and Company, 8th ed., 2011

Course Objectives:

CHM 3120 is the first course in analytical chemistry. The analytical process is introduced. This course covers three aspects of the analytical process: sampling, statistical treatment of the data and classical methods of quantitative analysis and their modern counterparts. The latter aspect requires a systematic treatment of acid-base equilibria, precipitation and complex formation equilibria, and oxidation-reduction chemistry.

Website: <http://lss.at.ufl.edu>

Exams: Friday, May 24, 2013, FLI 105
Friday, June 14, 2013, FLI 105
Friday, July 5, 2013, FLI 105
Friday, July 19, 2013, FLI 105
Wednesday, August 7, 2013, FLI 105

All exams are at the regular lecture time. All exams are 100 points. Exam regrades must be requested in writing within 3 weekdays after return of the exam. Missed exams will be dealt with in accordance with University Policy, as will any request for an Incomplete in the course.

Grading: Exams (100 pts each) total points possible = 500

Course grades will be assigned based on the following ranges:

A 430 - 500	A- 420 - 429	
B+ 400 - 419	B 355 - 399	B- 345 - 354
C+ 325 - 344	C 280 - 324	C- 270 - 279
D+ 250 - 269	D 210 - 249	D- 200 - 209
E < 200		

Drop Date: August 2, 2013

Tentative Lecture Schedule

<u>Topic</u>	<u>Date</u>	<u>Problems</u>	<u>Chap (sections)</u>
1. Process Measurement	13 May	Ch0: 1, 3, 5, 6 Ch 27: 3, 22 Ch1: 5, 14, 19, 20, 22, 26, 28, 30, 32, 34, 45, 46	0 (1,2); 27(p.699-704) 1
Tools, Experimental Error	15 May	Ch2: 21, 22, 26 Ch3: 5, 12, 15, 17, 22, 23	2 (1-9) 3 (1-5)
Statistics	17 May	Ch4: 3, 11, 12, 13, 14, 22, 24, 28, 29, 35	4 (1-4,6-8)
Meth. Valid, Calib. Meth.	20 May	Ch5: 16, 17, 18, 19, 24, 30, Handout	5 (1-4)
Chem. Equil., Activities	22 May	Ch6: 4, 5, 6, 9, 12 Ch7: 4, 6, 9, 11, 12 Ch7: 4, 6, 13, 15	6 (1,2); 7 (1-2)
EXAM 1	24 May	Chapters (0- 5, 27)	
Solub. Equil., Complex Formation	29 May	Ch6: 14, 15, 16, 17, 24, 25 Ch7: 9, 10	6 (3,4) 7 (1)
Acids/Bases, Systematic Equilibrium	31 May	Ch6: 29, 32, 35, 36, 43, 44, 47, 48, 49, 50	6 (5,6,7)
Systematic Equilibrium	3 Jun	18, 19, 23, 25	7(4,5)
Monoprotic A/B	5 Jun.	2, 3, 5, 7, 8, 13, 20	8 (1-4)
Buffers	7 Jun.	26, 32, 33, 38, 39	8 (5)
Polyprotic A/B.	10 Jun.	3, 4, 6, 15	9(1,2)
Polyprotic A/B	12 Jun.	18, 25, 30, 31, 40	9(3-6)
EXAM 2	14 Jun.	Chapters (6, 7, 8)	
Precipitation Titrations	17 Jun.	43, 45, 54	26(5, 6, 8)
A/B Titrations	19 Jun.	2, 7, 8, 14, 17	10 (1-3)
A/B Titrations	21 Jun.	19, 40, 41, 44, 45, 47	10 (4-6)
Fractional comp complex, EDTA Titrations	1 Jul.	6, 7, 15b, 16, 17b, 25, 26, 32, 36, 38	11 (1-3,5,6)
Electrochem.	3 Jul.	3, 5, 6, 9, 16, 17	13 (1-5)
EXAM 3	5 Jul.	Chapters (9; 10; 11, 26)	
Potentiometry	8 Jul.	2, 3, 6, 8	14 (1-4)
Potentiometry	10Jul.	26. 33, 40, 441	14 (5-7)
Redox. Titr.	12 Jul.	2, 5, 6, 7, 14, 18, 30	15 (1,2,4-7)
Spectro.	15 Jul.	Ch17:1, 3, 11, 12, 18, 23 Ch19: 1,3,7	17 (1-4, 6-7); 19(1-4)
Applied Spectro.	17 Jul.	Ch17: 21,22 Ch18: 1, 5, 6 (TI-83)	17 (5) 18(1)
EXAM 4	19 Jul.	Chapters (13, 14, 15, 16, 18, 19)	
Atomic Spectro.	22 Jul.	22, 23, 25	20 (1-2,4-5)
Separations	24 Jul.	7, 8, 9, 11, 13	22 (1-2)
Separations	26 Jul.	19, 20, 28, 38, 45	22 (3-5)
GC	29 Jul.	8, 20, 21, 24a,b, d	23 (1-3)
HPLC	31 Jul.	13, 19, 37	24 (1-4)
Chrom. Meth.	2 Aug.	12, 18, 19, 21, 22	25 (1-4)
Chrom. Meth.	5 Aug.	34, 35, 40	25 (6-7)
EXAM 5	7 Aug.	Chapters (20, 22,23, 24, 25)	

Assigned Problems:

Problems are neither collected or graded, but in preparation for exams, you should work as many problems as possible. The problems assigned represent a **minimum** set of problems that should be worked. You should try to work a problem several times before seeking help. If you want me to help you with a problem, you will need to show me the paper with your attempt to work the problem. Most of these problems involved several steps, each of which is a potential pitfall. I must be able to diagnose into which one you fell.

Academic Honesty Guidelines:

Students are expected to pursue knowledge with integrity. Exhibiting honesty in academic pursuits and reporting violations of the Academic Honesty Guidelines will encourage others to act with integrity. Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XI of the Student Conduct Code. Guidelines may be read at:

<http://www.dso.ufl.edu/studentguide/studentconductcode.php>

Class Attendance:

Roll will not be taken, but you are responsible for all material covered in the lectures.

Students with Disabilities:

The Dean of Students Office provides individualized assistance for students with documented disabilities. Students requesting classroom accommodations must register with the Dean of Students Office and provide the appropriate documentation verifying their disability. The Assistant Dean of Students is responsible for Students with Disabilities Programs, P202 Peabody Hall, 392-1261 (Voice).

Counseling Services:

The University Counseling Center is located in P301 Peabody Hall. The major goal of the Center is to provide counseling and student development services to students. Individual, couples, and group counseling are available to help students with a wide variety of personal, academic, and career concerns. All counseling is confidential. Appointments may be made in person Monday through Friday 8:00 a.m. to 5:00 p.m. Typically, the student's first contact will be an intake interview in which the student and counselor make decisions about the type of help needed. Students requiring immediate help are seen on a non-appointment emergency basis. Other services include Outreach Programs and Consultation, and the following special counseling programs: alcohol and substance abuse, couples, multicultural, women's issues, and math confidence. The Peer Counseling Program involves specially trained undergraduate students who provide a help with choosing a major, computer assisted career counseling, and study skills workshops. Self-help materials are available in our brochure racks and on our website. For more information, call 392-1575 or visit the Counseling Center website.

Class Demeanor:

Cell phones must be turned off while you are in the lecture room. It is disruptive to others to have the lecture interrupted by ringing phones.