

CHEMISTRY 122
Separations and Measurements
Spring, 2000
MWF 10:20-11:20
Dr. Bradford D. Pendley
411 Kennedy Hall: 843-3959

DESCRIPTION: Both the lecture and the laboratory elements of this course are integrated. In this course you will build upon your understanding of chemistry by learning how certain chemical systems are modeled and the principles upon which numerous chemical analyses are based. The topics you will explore this semester include the statistical treatment of data, ionic equilibria including acid/base chemistry, spectrophotometry, electrochemistry including redox reactions and potentiometry, and analytical methods of separation.

GOALS: The goals that you should work towards in this course are;

1. To begin learning how certain chemical systems are modeled;
2. To begin learning the principles upon which many chemical analyses are based;
3. To begin learning methods used to assess data.

TEXT: *Quantitative Chemical Analysis*, 5th ed., by Daniel C. Harris

EVALUATION: There will be four examinations and one comprehensive final examination during the semester. Each of these will count 200 points. The total number of points you attained on these exams determines your final grade.

<u>Grade</u>	<u>Total points</u>
A- / A	900-1000
B- / B / B+	800-899
C- / C / C+	700-799
D- / D / D+	550-699
F	below 550

The comprehensive final exam will encompass concepts that you should have learned in either (or both) the lecture and laboratory segments of the course. Eighty percent of your final exam will be identical to everyone else's while twenty percent will come from questions that you missed on previous exams. If you correctly and completely answer any or all of the questions that you had missed previously, you will not only receive full credit for the problem on the final exam, but you will also receive back all credit you lost for that problem on the original exam. Thus, it is possible for you to recover up to 40 points (i.e., 20% of 200 points) on the final exam.

POLICIES: My expectation is that you will attend all classes unless directed otherwise. There will be regularly assigned readings, problem sets, practice quizzes and in-class problems and I expect that you will complete these assignments in a timely manner. None of these assignments are graded; they are for your benefit only. These assignments are the minimum I believe is necessary for an average student to understand the subject material. If you are unable to attend a class, it is your responsibility to obtain all material discussed and assignments given.

You will be allowed to make up a missed exam with an excused absence. If at all possible, please let me know ahead of time if you are not able to take an exam at its scheduled

time so that we can arrange another time for you to take it. If the absence is not excused, you will receive zero points for the exam. Your exams and other work specified must be pledged to be your own.

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<u>Day/date</u>	<u>Topic</u>	<u>Chapter</u>
W 1/12	Class introduction, expectations	
F 1/14	Statistics	3, 4
W 1/19	Statistics	3, 4
F 1/21	Statistics	3, 4
M 1/24	Ionic equilibria	6
W 1/26	Ionic equilibria	6
F 1/28	Ionic equilibria	6
M 1/31	Ionic equilibria	6
W 2/2	Activity coefficients	8
F 2/4	Systematic treatment of equilibria	9
M 2/7	Systematic treatment of equilibria	9
W 2/9	EXAM I (200 points)	
F 2/11	Acid/base equilibria	6, 10
M 2/14	Acid/base equilibria	10
W 2/16	Acid/base equilibria	10
F 2/18	Acid/base equilibria	10, 12
M 2/21	Polyprotic acids and bases	11
W 2/23	Polyprotic acids and bases	11
F 2/25	Polyprotic acids and bases	11
M 2/28	Polyprotic acids and bases	11
W 3/1	EXAM II (200 points)	
F 3/3	Properties of light	19
M 3/13	Spectrophotometry	19
W 3/15	Spectrophotometry	19
F 3/17	Spectrophotometry	19, 20
M 3/20	Electrochemistry	14
W 3/22	Electrochemistry	14
F 3/24	Electrochemistry	14
M 3/27	Electrochemistry	14
W 3/29	EXAM III (200 points)	
F 3/31	Redox reactions	16

M	4/3	Redox reactions	16
W	4/5	Redox reactions	16
F	4/7	Potentiometry	15
M	4/10	Potentiometry	15
W	4/12	Potentiometry	15
M	4/17	Analytical separations	23
W	4/19	Analytical separations	23
M	4/24	EXAM IV (200 points)	
W	4/26	Chromatography	23
F	4/28	Chromatography	23