

CHEM 31E-ZR3: INTRODUCTORY CHEMISTRY

Fall 2011

Chem 31 E (92190) & ZR3 (92358) Lecture: T-Th 4:00 - 5:15 pm, Angell B106

1. GENERAL INFORMATION:

A. LECTURE:

Lecturer: John Sharp **Office:** A234 Cook

email: John.Sharp@uvm.edu

Office Hours: MWF 9:30-10:30 am , TTh 2:00-3:00 pm
or by appointment

Lecture: The lecture each week will primarily be used to cover new material.

Included in this syllabus is a tentative schedule covering the timing of the lecture, text material, and the corresponding problems to be worked from the text.

Attendance at lecture is not mandatory, but if you do come please stay through the lecture.

Exams: Exams are schedule for Thurs nights from 7:00 - 9:30 pm in B106 Angell. There are no make up dates. As only 3 out of the four exams given are used to determine your grade a missed exam is the grade that is dropped.

While taking an exam only non-programable calculators are permitted. No other electronic devices are allowed (i.e. no cell phones, mp-3 players, ipods etc). If you wish to use a calculator during an exam it is the responsibility of the student to bring a non-programable calculator to the exam. Students caught using any electronic device other then a non-programable calculator will receive a zero for the exam.

Thurs, 22 SEP	ch: 1, 2, 3, 4 (sec .1-.6), 9.6 electronegativity
Thurs, 13 OCT	ch: 5, 6
Thurs, 10 NOV	ch: 7, 8, 9 (sec.1,.3-.10), 10 (sec .1-.7)
Thurs, 1 DEC	ch: 10 (sec .8), 11, 9 (sec .4)
Tues, 13 DEC	4:30 - 7:15 Angell B106 Final Exam

Problem Session: Sun 4:30 Angell B112, week of exam only

Problems: Answers to the review questions and exercises are in the solutions manual. I will cover assigned problems during the scheduled review sessions. While it is strongly recommended that you do as many problems as possible, the problems are not collected and do not count towards your grade.

B. SUGGESTED READING:

Text: " Chemistry, A Molecular Approach " 2st ed , by Nivaldo Tro is sold at the UVM bookstore. The solutions manual that comes with the text has the complete solutions to all the assigned problems. The study guide while not required can be a help with problem solving.

Login: jsharp@uvm.edu Pass Word: FALL2011SHARP

Lab Manuals: "Chemistry 31, Experiments ", which is sold at the first floor stockroom, A-143 Cook, for \$10.00. "Working Safely With Chemicals" 2nd Ed, and a carbon-less copy lab notebook. which are sold at the UVM bookstore.

Class Notes and Old Tests: My class notes and the tests that were given to my Chemistry 31 class in the fall of 2009 and '10 are posted on Blackboard. The test questions will change but the format will remain the same.

C. Laboratory:

Attendance: Students must attend the lab section they are assigned to. Official documentation of sickness or family crisis is required if a lab is missed. Unexcused absences will result in a ZERO grade for that laboratory experiment. In order to take a lab at a time other than your assigned time one must obtain the permission of the instructor a week in advance. If more than two labs are missed you will receive an **F** for the course. Only the academic dean of your college may grant an incomplete.

Lab Videos: Prior to the attending a lab section it is mandatory to watch the video that accompanies that lab. The videos demonstrate the proper use of new equipment, and the safe handling of chemicals. The videos are found at www.uvm.edu/~chem/?Page=31Videos.html.

Breakage Card: A breakage card (\$40.00) must be purchased from the first floor stockroom, A-143 Cook, prior to your first lab. It is advisable to purchase this card as soon as possible in order to avoid having to wait in yet another line. The \$40.00 is refundable, and if you are careful and avoid breaking your equipment you should get most of it back. Remember don't leave home without it as you must have it with you to be admitted into lab.

Safety Eye wear: OSHA approved safety glasses or goggles must be worn by everyone once any experimentation has started in any area of a lab room. Students not observing this rule will receive a ZERO for that experiment, warnings will not be given. Safety eye wear can be purchased at the UVM bookstore.

CONTACT LENSES are a potential health hazard and should only be worn in the laboratory if you have no other type of corrective lenses. If you wear contact lenses you must wear goggles with them, and let your TA know.

Foot Wear: Only shoes that cover the toes are permitted in the lab. Sandals and open toed shoes are not permitted

Lab Notebook :A notebook with carbon-less copies is required for recording lab data. All data is to be recorded in ink.

D. COURSE GRADE:

1. Points needed to obtain a specific grade

A ≥ 910 B+ ≥ 860 B- ≥ 780 C ≥ 650 D+ ≥ 610 D- ≥ 540
 A- ≥ 890 B ≥ 800 C+ ≥ 740 C- ≥ 630 D ≥ 560 F ≤ 539

2. How to calculate your points

a) **Class = 800pts**

4 hr Exams = 4 grades

1 Final = 2 grades

6 grades - 1 grade = 5 grades x 1.6 = class pts

Only five grades are counted. If the final is your lowest grade it will only count as one unit. If an hour exams is your lowest grade then the final will count as 2 units. The lowest hour grade will be replaced by the grade on the final.

The 1.6 factor is because each test was only worth 100 pts, and therefore the maximum number of points obtainable from the tests are 500. In order to raise this to 800 pts you must multiply the 500 x 1.6 = 800.

Absences : Official documentation of sickness or family crisis is required if exams are missed. Unexcused absences from exams will result in a ZERO grade on your record. Students with legitimate excuses will be permitted to take an exam early. Except in very unusual circumstances makeup exams will not be administered after the scheduled exam time.

Example 1:

	Ex-1	Ex-2	Ex-3	Ex-4	Final x 2
Actual Scores	85	45	78	77	80 80
Scores Counted	85	80	78	77	80

Total pts = 390 x 1.6 = 624 pts from class

Example 2:

	Ex-1	Ex-2	Ex-3	Ex-4	Final x 2
Actual Scores	67	78	76	69	62 62
Scores Counted	67	78	76	69	62

Total pts = 352 x 1.6 = 563 pts from class

b) Laboratory = 200 pts

Notebook / Prelab	18 pts
Lab reports	110 pts
Quizzes	<u>72 pts</u>
	200 pts

Obtained from lab TA, average grade is normally an 80% or 160 pts

3. Determination of course grade.

Add up your points from the class and lab and then use the chart at the beginning to determine your course grade.

Example 1:

$$\begin{array}{r} 640 \text{ class pts} \\ + \underline{160 \text{ lab pts}} \\ 800 \text{ total pts} = \text{B} \end{array}$$

Example 2:

$$\begin{array}{r} 563 \text{ class pts} \\ + \underline{160 \text{ lab pts}} \\ 723 \text{ total pts} = \text{C} \end{array}$$

2. TENTATIVE LABORATORY SCHEDULE

<u>Date</u>	<u>Experiment</u>	<u>Description</u>
12 - 15 SEP	1	A. Lab Safety I (I-IV in WSWC) B. Density
19 - 22 SEP	2	A. Lab Safety II (V-XI in WSWC) B. Hydrated Salt
26 - 29 SEP	3	Mole Ratio
3 - 6 OCT	4	Acid Content of a Food Product
10 - 13 OCT	5	Syn and Ident of Coord Cpd
17 - 20 OCT	6	Gas Law Determination of MW
24 - 27 OCT	7	Heat Capacity of a Calorimeter
31 OCT - 3 NOV	8	ΔH° of MgO

7 - 10 NOV	9	Flame Emission Spec of Metals
14 - 17 NOV	10	Qualitative Analysis
21 - 25 NOV	THANKSGIVING	
28 NOV - 1 DEC	10	Finish Qual Analysis Check-out

3. TENTATIVE LECTURER SCHEDULE

<u>DATE</u>	<u>CHAPTER</u>	<u>SUGGESTED PROBLEMS</u>
30 AUG	1	ch1: 9,12,16,21,26,28,30,41,46,53,55,59,67,69,83,87, 93,95,98,106,110,117,122,125
1 SEP	Finish Ch1 Start 2	Ch2: 6,13 thru 24,6,10,13,15,21,31,39,41,47,50, 53,57,61,69,72,77,81,85,98,106,111
6 SEP	Finish 2	
8 SEP	Start 3	Ch 3: 2,4,8,14,32,34,37,44,47,49,52,57,61,67,69,72, 77,81,85,89,91,97,101,113,117,121,126
	electronegativity from Ch 9 (Sec 9.6) p372-373) Ch 9: 19	
13 SEP	3	
15 SEP	4	Ch4: 2,5,10,11,13,26,27,31,33,37,43,46,50,53,55,57, 60,63,65,71,75,98,101,107,111,114,117,120
	Will cover acid-base titrations but not the relative strength of acids-bases from sect 4.8. Will not cover REDOX reactions from 4.9	
20 SEP	4	
22 SEP	Finish 4 and Review EXAM 1 ch: 1, 2, 3, 4(sec .1-.6), electronegativity 9(sec.6)	
27 SEP	5	ch5: 1,9,12,15,17,21,24,32,34,36,38,42,45,47,49, 52,58,63,66,71,77,80,82,83,86,89,95,98,101, 104,106,111,115,121,127,129

29 SEP	Finish 5 Start 6	ch6: 6,10,11,13,15,19,21,25,32,35,39,42,44,46,49, 53,56,58,61,64,67,71,74,77,80,83,85,87,91, 97,102,106,110,113,
4 OCT	6	
6 OCT	6	
11 OCT	6	
13 OCT	Finish 6 and review EXAM 2 ch: 5, 6	
18 OCT	7	ch7: 2,5,7,9,12,16,20,26,32,34,39,42,45,52,60,63,68, 71,73,76,78,82,86,92,
20 OCT	Finish 7 8	ch8: 7,11,15,16,23,25,28,32,35,37,42,43,47,48,51, 55,58,61,64,65,68,72,75,78,80,83,85,89,91, 93,99,105,110
25 OCT	Continue 8	
27 OCT	Finish 8 Start 9	ch9: 3,15,19,21,26,28,32,37,51,55,60,63,65,70, 72,73,76,79,81,84,87,95,98,105,110,112
		(ch 9 sec .5,.7-.9 uses Lewis Dot Theory to develop bonding in molecular compounds. I will use VSEPR Theory and hybridization theory from ch 10 to develop bonding in molecular compounds.)
		will cover 9.10 after VSEPR in Ch 10, Problems: 73,75,78,98
		will cover 9.4 Lattice Energy, with solids in ch11
		will cover 9.11 Electron Sea model with band theory in ch11.13
1 NOV	Finish 9 Start 10 (sec.1-.7)	ch10: 1,5,9,14,16,31,34,36,39,42,46,50,53, 57,63,86,92,95

MO Theory, 10.8, will be on exam 4

3 NOV	10
8 NOV	Finish 10 thru sec .7
10 NOV	Review EXAM 3 ch: 7, 8, 9(sec .1-.3, .5-.10), 10(sec .1-.7)
15 NOV	10.8 (MO Theory) ch10: 23,25,28,71,75,77
17 NOV	Finish MO Theory 9.11 Electron Sea Model 11.13 Band Theory Start 11 ch 11: 5,9 thru 35,46,48,50,53,56,55,61,66,68,71,74, 78,81,84,86,89,102,104,109,114,117,119, 122,125,128,137
21-25 NOV	Thanksgiving
29 NOV	Finish 11, and 9.4 Lattice Energy ch9: 9,11,33,40,46,48,89,114
1 DEC	Review EXAM 4 ch: 10(sec .8), 11, 9(sec .4)
6 DEC	Review
8 DEC	Review
13 DEC	Final (Comprehensive) 4:30 - 7:15 in Angell B106