

# ***CHEM 32: INTRODUCTION TO CHEMISTRY***

Spring 2014

Chem 32C (11099) and ZRC (14708), TR 4:00 - 5:15 pm, Angell B-106

## **1. GENERAL INFORMATION:**

### **A. LECTURE:**

**Lecturer:** John Sharp      **Office:** A-234 Cook      **E-Mail:** John.Sharp@uvm.edu.

**Office Hours:** T-Th 10:00-11:30, 1:30-3:30 and 5:30-6:15  
Wed: 3:00-6:00      or by appointment

### **Lecture:**

Lectures cover the material in the order assigned at the end of this syllabus in the tentative lecture section. Attendance at lecture is not mandatory. If you do come please stay through the lecture and refrain from talking to other students.

**Exams:** Exams are schedule for Wed nights from 6:15 - 9:00 pm in MLS 235. There are no make up dates. As only 3 out of the four exams given are used in determining 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). Students caught using any electronic device other then a non-programable calculator will receive a zero for the exam. If you do wish to use a calculator during an exam it is the responsibility of the student to bring a non-programable calculator to the exam.

Listed below are the scheduled exam dates

Ex-1	Wed,	5 FEB	Ch: 4(sec .4-.7), all 12, 13
Ex-2	Wed,	12 MAR	Ch: sec 4.8, all of 14, 15
Ex-3	Wed,	2 APR	Ch: all 16 ,17
Ex-4	Wed,	23 APR	Ch: sec 4.9, all of 18, 19
Final	Tues,	6 MAY	Comprehensive (4:30-7:15 in Angell B 106)

**Recitation:** Wed, 6:15-7:15 in MLS 235

**Review Sessions:** week of exam only, Sun 4:30 pm Angell B112,

**Problems:** Answers to the review questions and exercises are in the solutions manual. 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 " by Nivaldo Tro, volume 2, custom edition for UVM, is sold at the UVM bookstore. This is actually the third edition of Tro, but is the second time it has been packaged specially for UVM. The solutions manual that comes with the text has the complete solutions to all the assigned problems.

Login: [jsharp@uvm.edu](mailto:jsharp@uvm.edu)

Pass Word: SHARPSRING2014

### **Lab Manual:**

"Chemistry 32, A Lab Manual", sold at first floor stockroom, A-143 Cook, for \$15.00

### **Notes & Old Tests:**

Available on Blackboard

## **C. LABORATORY:**

**TA:** TBA

### **Time:**

As scheduled

### **Lab Videos:**

Prior to the attending a lab session it is mandatory to watch the video that accompanies the lab. The videos demonstrate the proper use of new equipment, and the safe handling of chemicals. The videos are found at

<http://www.uvm.edu/~chem/courses/?Page=32Videos.html>

### **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 you must obtain the permission of the lab coordinator, Christine Cardillo. If possible, please reschedule labs a week in advance. If for any reason more than two labs are missed you will receive an **F** for the course unless the dean of the college you are enrolled in grants you an incomplete.

### **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 a line. The \$40.00 is refundable if you are careful and avoid breaking your equipment. Remember don't leave home without it as it is required in order 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 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, and be sure to inform your TA that you are wearing contacts.

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

**Lab Notebook:** A notebook with carbon-less copies must be used to record data taken in the lab. All data must be recorded in ink at the time the data is generated.

**D. COURSE GRADE:**

Total Points = 1000 (800 class + 200 lab)

## 1. Points needed to obtain a specific grade

A ≥ 910	B+ ≥ 860	B- ≥ 780	C ≥ 650	D+ ≥ 600	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 only counts once. If an hour exam is your lowest grade then one of the grades for the final will replace that low exam grade. 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.

**An option to taking the final:**

You may elect not to take the final and use your lowest hourly exam score as the score for the final. You must let me know before you take the final exam if you wish to exercise this option. Once you start taking the final exam it will be counted.

**b) Laboratory = 200 pts**

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

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

**Absences:**

Unexcused absences from exams will result in a ZERO as a grade on your record. With that said, please contact me any time you have trouble making an exam to discuss possible make up options.

**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

**3. Determination of 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>
27 - 30 JAN	Molar Mass from Freezing Point Depression
3 - 8 FEB	Iodination of Cyclohexanone
10 - 13 FEB	$K_{eq}$ of $FeSCN^{+2}$
17 - 20 FEB	<b>Presidents Day</b> - No Lab
24 - 27 FEB	Acid Neut. Pot. Anti-Acids
3 - 6 MAR	<b>Spring Break</b> - No Lab
10 -13 MAR	Acid-base Equilibria and Buffers
17 - 20 MAR	$K_{sp}$ of Copper (II) tartrate
24 - 27 MAR	Thermodynamics of the Dissolution of Borax
31 MAR - 3 APR	Oxidizing Power of Bleaches
7 - 10 APR	Potentiometric Det. of $K_a$
14 - 17 APR	Electrolysis/Electroplating Check-out

## 3. TENTATIVE LECTURER SCHEDULE

<u>DATE</u>	<u>CHAPTER(section)</u>	<u>SUGGESTED PROBLEMS</u>
14 - 16 JAN	Review Sections	Ch 4 sec .4 - .7 (Molarity, Net Ionic Rxns, Titration) Ch 11 sec .3 - .4 (Intermolecular forces)
	12 All	Ch12 - 6,8,10,12,13,14,18,21,25,31,33,35,37,39,42,43,47, 49,51,54,57,59,61,63,70,71,73,75,78,80,83,86,89, 92,93,96,99,101,106,108,112,115
21 JAN	Finish 12 Start 13	Ch13 - 3,6,9,12,14,19,23,25,27,30,33,39,41,43,45,47,51, 53,55,57,59,61,64,67,72,75,79,81,85,87,90,94,97, 104,108
23 JAN - 4 FEB	Finish 13	

5 FEB      **TEST 1: All of 12, 13**

6 - 13 FEB    14 All                      Ch 14- 4 - 20,21,23,27,29,31,32,33,35,37,40,43,46,48,  
53,55,58,62,63,69,71,74,77,79,81,85,86,89

18 - 27 FEB    Review Section      Ch 4 sec 8 (Acid-Base Rxns)  
Start 15, will cover theory presented in sec 15.1- 15.4 and 15.10 first

                    15 All                      Ch 15 - 2-6,8-30,34,35,36,37,39,41,45,49,53,57,61,63,65,  
67,69,71,73,75,79,82,85,87,89,91,93,95,97,104,  
106,110,111,115,117,120,123,125,130,137,142,145

3 - 6 MAR                              **OFF - SPRING BREAK**

11 MAR      Finish 15

12 MAR      **TEST 2: All of 14, 15**

13 MAR      16 All                      Ch 16 - 2-23,27,29,31,34,39,41,45,47,49,51,53,55,57,59,  
63,65,67,71,74,76,80,82,83,87,89,91,94,97,99,100,  
103,107,114,117,120,123,126,130,134,136

18 - 20 MAR    Finish 16  
                    17 All                      CH 17 - 4-26,,27,31,33,37,39,41,44,47,49,51,55,57,59,61,  
63,65,67,71,73,75,77,79,82,85,87,88,89,93,98

25 - 1 APR    Finish 17

2 APR      **TEST 3: All of 16 ,17**

3 - 10 APR    Review Section      Ch4 sec .9 (Acid-Base rxns)  
18 All                      Ch 18 - 4-36,39,41,43,45,47,49,51,53,57,59,61,63,65,67,  
71,73,75,77,79,82,86,88,93,96,99,102,  
103,109,113,117,121,123,125

15 - 22 APR    19 All                      Ch 19 - 4 - 11,14-17,19-24,27-30,31,33,35,41,43,45,49,51,  
53,55,57,63,67,69,71,75,76,77,79,82,84,88,91,  
95,98,99,102

23 APR      **TEST 4: All of 18, 19**

24 - 29 APR    Review

6 MAY      **Final - Cumulative**                      4:30-7:15 in Angell B106