

Spring 2015 CHEM 32A (10116)

Lecturer: Erik Ruggles, Ph.D.

Office: A237 Cook

Email: Erik.Ruggles@uvm.edu

Office Hours: M W F 9:00am – 11:00am
T Th 10:00am – 12:00pm
or by appointment

Lecture Time: M W F 11:45 am – 12:35 pm **Location:** Angell B106

Lecture

Lecture: The lecture each week will be used primarily to cover new material. Included in the syllabus is a tentative schedule covering the topics and timing of the lecture, reading material, and homework problem sets. Most will find it difficult to do well in this class if they do not attend the lecture. My class lecture notes for the entire semester are posted on Blackboard.

Textbook: “Chemistry, A Molecular Approach” Vol II 3rd Ed., by Nivaldo Tro (2nd UVM Custom Edition) can be purchased at the UVM bookstore. The solutions manual comes with the text and has the complete solutions to all the textbook problems. The solutions manual while not required can be a great help during problem solving.

Homework Problems: Homework assignments from the textbook can be found in the Lecture Schedule portion of the syllabus and I will assign homework via Blackboard Announcements after every lecture. Answers to these textbook problems can be found in the solutions manual. I strongly encourage you to keep up with the homework assignments and do as many problems as possible. These problems combine mathematics with scientific concepts and are challenging, so the more you practice the better you will get. **To encourage practice we will be using the online program Sapling for specific graded homework sets.** Blank old exams from my 2013 and 2014 General Chemistry classes as well as their answer keys are posted on Blackboard. These are a great way to evaluate what you understand as they provide a real game-day experience. If you take these like real exams you will quickly know what you understand and what you do not. You can then practice or get help in those areas of difficulty. Please remember that the test questions will change for your exams, but the format and concepts will remain the same.

Problem Sessions: Throughout the semester I will hold recitations on Tuesdays evenings from 7:00-8:00 pm in Marsh Life Sciences Lecture Hall 235 to better clarify topics and/or do problem solving. Also the Sunday before a mid-semester exam I will hold an extra review session from 7:00-9:00 pm in Angell B106 Lecture Hall as well. For continued review, the class before the exam will be a review session instead of the standard lecture.

Exams: The exams are scheduled to be **Tuesday evenings from 7:00-9:45 pm in Marsh Life Sciences 235 (A—M) or Fleming Museum 101 (O—Z).** There are no scheduled make up dates. While taking the exams only non-programmable non-graphing calculators are permitted. No other electronic devices are allowed (i.e. no cell phones, mp3 players, ipods, etc.). It is the responsibility of the student to bring a non-programmable non-graphing calculator to the exams, since there will be no extras provided. **Students caught using any other electronic device other than a non-programmable non-graphing calculator will receive a zero for the exam. Offenses against the Code of Academic Integrity (i.e. cheating) are deemed serious and insult the integrity of the entire academic community. Any suspected violations of the code are taken very seriously and will be forwarded to the Center for Student Ethics and Standards for further investigation.**

Laboratory

Lab Manuals: "Chemistry 32, A Lab Manual", which is sold in the first floor stockroom in Cook (A143) for \$15.00.

Lab Notebook: A notebook with carbon-less copies is required for recording lab data. All data is to be recorded in ink (not pencil).

Attendance: Students must attend the lab section they are assigned to. 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. An unexcused absence will result in a **ZERO** grade for the laboratory experiment. Official documentation of sickness or a family crisis is required for an excused absence. If there is a need to reschedule your lab time to one that is not your assigned time you must obtain permission at least one week in advance. **Please contact our Lab Director, Christine Cardillo (Christine.Cardillo@uvm.edu) with any attendance issues.**

Safety Eye Wear: Everyone in the lab must wear OSHA approved (EZ87stamped) safety glasses or goggles once any experimentation has been started. Students not observing this rule will receive a **ZERO** for the experiment, warnings will not be given. Safety eyewear can be purchased at the UVM bookstore. **Contact Lenses are a potential health hazard and can be worn in the laboratory only if no other types of corrective lenses are available. If you have to wear contact lenses then you must wear goggles and please let your TA know.**

Footwear: Only shoes that cover the toes are permitted in lab. Sandals, flip-flops and any other open toed shoes are not permitted. You will be asked to change your shoes or receive a **ZERO** for the experiment.

Breakage Card: A breakage card (\$40.00) must be purchased prior to your first lab from the first floor stockroom in Cook A143. It is advisable to purchase this as soon as possible to avoid waiting in yet another line. The \$40.00 is refundable and if you avoid breaking your equipment you will get all of it back. Remember to not leave home without it, as you must have it with you to be admitted into the lab.

Prior to Start of Lab: Purchase your lab manual, lab notebook, breakage card, and safety glasses. Also, on Blackboard review and complete the Safety Presentation and Safety Quiz. **If you have not purchased or completed these items you will not be able to begin the lab portion of the course.**

Lab Videos: Prior to attending your lab it is mandatory to view the video that accompanies the lab. These videos demonstrate the proper use of new equipment and the safe handling of chemicals. Videos can be found at <http://www.uvm.edu/~chem/courses/?Page=32Videos.html>.

Course Grade

Percent Ranges for Grades:

A+ ≥ 96	A ≥ 91	A- ≥ 89	B+ ≥ 86	B ≥ 80	B- ≥ 78	C+ ≥ 74
C ≥ 65	C- ≥ 63	D+ ≥ 60	D ≥ 56	D- ≥ 53	F < 53	

How to Calculate Your Points:

1) Class = **800 total points** (80% of grade; Exams and Homework)

Exams = **500 points** (5 Exams) X 1.44 = **720 weighted points**

Homework = **80 points**

If your final is your lowest grade it will count only as one unit. If one of the hour exams is your lowest grade then your final will count as two units. The lowest hour exam grade will be replaced by the grade on the final. If you are absent from an exam official documentation of sickness or family crisis is required or you will receive a **ZERO** for the exam. Students with legitimate excuses will be permitted to take the exam early. Except in very unusual circumstances makeup exams will not be administered after the scheduled exam time.

Example 1:

	Exam 1	Exam 2	Exam 3	Exam 4	Final X2	Homework
Actual	85	45	78	77	75 75	70
Counted	85	75	78	77	75	70

Exam Points = 390 points X 1.44 = 561.6 weighted points

Class Total Points = 561.6 points + 70 = 631.6 points

Example 2:

	Exam 1	Exam 2	Exam 3	Exam 4	Final X2	Homework
Actual	67	78	76	69	62 62	55
Counted	67	78	76	69	62	55

Exam Points = 352 points X 1.44 = 506.88 weighted points

Class Total Points = 506.88 points + 55 = 561.88 points

2) Laboratory = **200 points** (20% of grade)

Prelab (2 pts/per)	18 points
Lab Reports (10 pts/per)	100 points
Quizzes (8 pts/per)	72 points
Lab Safety Quiz	<u>10 points</u>
	200 points

(Obtained from the lab TA, the average grade is normally an 82.0% or 162 points)

3) Course Grade Determination

Example 1:

$$\begin{array}{r} 631.6 \text{ class points} \\ + \quad \underline{162 \text{ lab points}} \\ \hline 793.6 \text{ total points/1000 possible} = 79.4\% = \text{B-} \end{array}$$

Example 2:

$$\begin{array}{r} 561.88 \text{ class points} \\ + \quad \underline{162 \text{ lab points}} \\ \hline 723.88 \text{ total points/1000 possible} = 72.3\% = \text{C} \end{array}$$

Academic Integrity

Offenses against the Code of Academic Integrity (i.e. cheating) are deemed serious and insult the integrity of the entire academic community. Any suspected violations of the code are taken very seriously and will be forwarded to the Center for Student Ethics and Standards for further investigation.

Schedule and Homework Problems:

February 3	Exam 1 (7-10pm; see “Exams” for location)
March 10	Exam 2 (7-10pm; see “Exams” for location)
March 27	Last Day to Withdraw
March 31	Exam 3 (7-10pm; see “Exams” for location)
April 21	Exam 4 (7-10pm; see “Exams” for location)
April 28	ACS Assessment (7-10pm; see “Exams” for location)
May 1	Final Exam (7:30-10:15am; Angell B106)

<u>Date</u>	<u>Chapter</u>	<u>Homework Problems</u>
January 12-16	4.4-4.7 Review 12	Ch12: 6,8,10,12,13,14,18,21,25,31,33,35,39, 42,43,47,49,51,54,57,61,63,70,71,73,75,78,80, 83,86,89,92,93,96,99,101,106,108,115
January 19	Martin Luther King Holiday	
January 20-23	12 and 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
January 26	Last Day to Add/Drop Course	
January 26-30	13	
February 2-3	Review	
February 3	First Exam	Chapters 4.4-4.7, 12, 13
February 4-6	14	Ch14: 4,8,12,14,21,23,27,29,31,33,37,40,43, 46, 52,55,58,61,63,69,71,75,77,79,81,84,86,89
February 9-13	14	
February 16	Presidents Day	
February 17-20	14 4.8 Review 15	Ch15: 5,10,15,23,26,35,37,38,41,44,46,47,51, 56,57,59,61,63,65,69,75,77,81,85,87,89,92,95, 97,99,103,107,113,115,117,119,125,136,137
February 23-27	15	
March 2-6	SPRING BREAK	

March 9-10	Review	
March 10	Second Exam	Chapters 4.8, 14, 15
March 11-13	16	Ch16: 2,4,6,11,12,14,19,21,29,31,34,41,45, 47,49,51,53,55,57,59,63,65,71,74,76,80,82, 87,89,91,94,97,99,100,103,107,110,111,114 117,120,123,126,130,134
March 16-20	16 17	Ch17: 7,9,12,16,23,26,27,31,33,37,39,41,44, 47,49,51,55,57,59,61,63,65,67,71,73,77,79,82, 85,87,88,93,98
March 23-27	17	
March 27	Last Day to Withdraw from Course	
March 30-31	Review	
March 31	Third Exam	Chapters 16,17
April 1-3	4.9 Review 18	Ch18: 4,5,6,9,13,17,18,19,30,34,39,41,43,45, 47,49,51,53,57,61,63,65,67,71,73, 75,77,79,82 82,86,88,93,96.99,102,103,109,113,117,121, 123
April 6-10	18	
April 13-17	19	Ch19: 4-11,14,17,21,28,31,33,35,41,43,45,49, 51,53,55,57,63,67,69,71, 77,79,81,88,91,95,98 99,103
April 20-21	Review	
April 21	Fourth Exam	Chapters 4.9, 18 19
April 22-24	Review	
April 27-28	Review	
April 28	ACS Assessment	
April 29	Review	Last Day of Classes
May 1	Final Exam	Cumulative (7:30am-10:15am; Angell B106)

Laboratory Schedule

<u>DATE</u>	<u>EXPERIMENT</u>	
January 12 - 15	No Lab	
January 19 - 22	No Lab	
January 26 - 29	Molar Mass from Freezing Point Depression	pg 15
February 3 - 6	Iodination of Cyclohexanone	pg 19
February 9 - 12	Keq of FeSCN^{+2}	pg 24
February 16 - 19	Presidents Day - No Lab	
February 23 - 26	Acid Neutralization of Anti-Acids	pg 28
March 2 - 5	Spring Break - No Lab	
March 9 - 12	Acid-base Equilibria and Buffers	pg 30
March 16 - 19	K_{sp} of Copper (II) tartrate	pg 37
March 23 - 26	Thermodynamics of the Dissolution of Borax	pg 40
March 30 - April 2	Oxidizing Power of Bleaches	pg 44
April 6 - 9	Potentiometric Det. of K_{a}	pg 47
April 13 - 16	Electrolysis/Electroplating CHECK OUT	pg 51
April 20 - 23	No Lab	
April 27 - 29	No Lab	