

Spring 2012 CHEM 32B (10137 and 14573)

Lecture

Lecturer: Erik Ruggles, Ph.D.

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Office: A237 Cook

Office Hours: M W F 10:00 – 11:30 am
T Th 9:00 – 10:30 am
or by appointment

Lecture Time: T Th 1:00 – 2:15 pm

Location: Angell B106

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 problem sets. Attendance of the lecture is not mandatory, but when you do come please stay through the entire lecture. 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" 2nd Ed., by Nivaldo Tro can be purchased at the UVM bookstore. The solutions manual comes with the text and has the complete solutions to all the assigned problems. The study guide while not required can be a great help during problem solving.

Problems: Answers to problem sets and exercises are in the solutions manual. I will cover assigned problem sets during scheduled review sessions. I strongly encourage you to do as many problems as possible. The problems combine mathematics with scientific concepts and are challenging, so the more you practice the better you will get. Blank old exams from my 2010 and 2011 General Chemistry classes as well as their answer key will be posted on blackboard. These are a great way to evaluate what you understand and what you do not as the test questions will change but the format and concepts will remain the same.

Problem Sessions: Throughout the semester I will hold optional meetings on Tuesdays evenings from 7:00-8:30 pm in Billings Lecture Hall to better clarify topics 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. Also, the class before the exam a review session will be held 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—P) or Rowell 103 (R—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.**

Exam Dates

February 7	Chapters 4(sect. 4-7), 12, 13
March 13	Chapters 14, 15
April 3	Chapters 16, 17
April 24	Chapters 18, 19
May 10	Final Exam (comprehensive; 7:30-10:15 am, Angell B106)

Laboratory

Lab Manuals: "Chemistry 32, A Lab Manual", which is sold in the first floor stockroom in Cook (A143) for \$10.00.

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 from me a week in advance.

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>.

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.

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 = 500 points

Four Hour Exams = 4 grades

+ One Final Exam = 2 grades

6 grades

6 grades – 1 grade = 5 grades = **500 class points**

Only five grades are counted for a total of 500 class 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
Actual Scores	85	45	78	77	75 75
Scores Counted	85	75	78	77	75

Total Points = 390 points from class/500 possible = 78.0%

Example 2:

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

Total Points = 352 points from class/500 possible = 70.4%

2) Laboratory = 200 points

Notebook and Prelab	30 points
Lab Reports	95 points
Quizzes	56 points
Technique	<u>19 points</u>
	200 points

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

3) Course Grade Determination

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

Example 1:

$$\begin{array}{r} 390 \text{ class points} \\ + \quad \underline{162 \text{ lab points}} \\ \hline 552 \text{ total points}/700 \text{ possible} = 78.8\% = \text{B-} \end{array}$$

Example 2:

$$\begin{array}{r} 352 \text{ class points} \\ + \quad \underline{162 \text{ lab points}} \\ \hline 514 \text{ total points}/700 \text{ possible} = 73.8\% = \text{C+} \end{array}$$

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.

Tentative Lecture Schedule

<u>Date</u>	<u>Chapter</u>	<u>Problems</u>
January 17-20	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 23-27	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 30-February 3	13	
February 6-7	Review	
February 7	First Exam	Chapters 4.4-4.7, 12, 13
February 8-10	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 13-17	14	
February 21-24	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 27-March 2	15	
March 5-9	SPRING BREAK	
March 12-13	Review	
March 13	Second Exam	Chapters 4.8, 14, 15
March 14-16	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 19-23	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 26-April 30	17	

April 2-3	Review		
April 3	Third Exam	Chapters 16,17	
April 4-6	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 9-13	18		
April 16-20	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 23-24	Review		
April 24	Fourth Exam	Chapters 4.9, 18 19	
April 25-May 2	Review		
May 10	Final Exam	Cumulative	7:30-10:15 am, Angell B106

Tentative Laboratory Schedule

<u>DATE</u>	<u>EXPERIMENT</u>	
17 - 19 JAN	No Lab	
23 - 26 JAN	No Lab	
30 JAN - 2 FEB	Molar Mass from Freezing Point Depression	pg 15
6 - 9 FEB	Iodination of Cyclohexanone	pg 19
13 - 16 FEB	K_{eq} of $FeSCN^{+2}$	pg 24
20 - 23 FEB	Presidents Day - No Lab	
27 FEB - 1 MAR	Acid Neutralization of Anti-Acids	pg 28
5 - 8 MAR	Spring Break - No Lab	
12 -15 MAR	Acid-base Equilibria and Buffers	pg 30
19 - 22 MAR	K_{sp} of Copper (II) tartrate	pg 37
26 - 29 MAR	Thermodynamics of the Dissolution of Borax	pg 40
2 - 5 APR	Oxidizing Power of Bleaches	pg 44
9 - 12 APR	Potentiometric Det. of K_a	pg 47
16 - 19 APR	Electrolysis/Electroplating CHECK OUT	pg 51