

# Spring 2017 CHEM 32B (10110)

**Lecturer:** Erik Ruggles, Ph.D.

**Office:** Hills 105

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**Office Hours:** T Th 10:00am – 1:00pm  
T Th 3:00pm – 4:00pm  
W 10:00am – 2:00pm  
or by appointment

**Lecture Time:** T Th 1:15 – 2:30 pm

**Location:** Marsh Life 235

## 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 An Atoms-Focused Approach” 3<sup>rd</sup> Ed., by Gilbert (Full text ISBN: 978-0393912340) and a special edition can be purchased at the UVM bookstore. The solutions manual comes with the UVM text and has the complete solutions to all the assigned 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 SmartWorks for specific graded homework quiz sets.*** Blank old exams from my 2015 and 2016 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 Wednesday evenings from **7:35-8:35 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 4:00-6:00 pm in Marsh Life Sciences Lecture Hall 235. 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 ***Wednesday evenings from 7:35-10:35 pm in Marsh Life Sciences 235.*** 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:** All experiments can be found online on your lab's BB website as individual pdfs. Please make sure you ***print out each experiment and bring to lab.***

**Lab Notebook:** A notebook with carbon-less copies is required for recording lab data. All data is to be recorded in ink (not pencil). A carbon-less copy lab notebook can be bought at UVM's bookstore.

**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 or in Cook A143. ***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 fully 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.***

**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.

**Prior to Start of Lab:** Print out your lab manual, as well as purchase (if you have not already) your lab notebook, breakage card, and safety glasses. ***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+ ≥ 97	A ≥ 92	A- ≥ 90	B+ ≥ 87	B ≥ 81	B- ≥ 79	C+ ≥ 75
C ≥ 66	C- ≥ 64	D+ ≥ 61	D ≥ 57	D- ≥ 54	F < 54	

### 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 lab points** (20% of grade)

Prelab (2 pts/per)	20 points
Lab Reports (10 pts/per)	100 points
Prelab Quizzes (8 pts/per)	+ <u>80 points</u>
	200 points

(Obtained from the lab TA, the average grade is normally an 80% or 160 points)

3) Course Grade Determination

Example 1:

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

Example 2:

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

## 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 8	Exam 1 (7:35-10:35pm; Marsh Life 235)
March 8	Exam 2 (7:35-10:35pm; Marsh Life 235)
April 3	Last Day to Withdraw
April 5	Exam 3 (7:35-10:35pm; Marsh Life 235)
April 26	Exam 4 (7:35-10:35pm; Marsh Life 235)
May 3	ACS Assessment (7:35-8:25pm; Marsh Life 235)
May 12	Final Exam (10:30am-1:15pm; Marsh Life 235)

<u>Date</u>	<u>Chapter</u>	<u>Homework Problems</u>
<b>Jan 16</b>	<b>Martin Luther King Holiday</b>	
Jan 17 - 20	11	Ch11: 1,4,8,11,13,15,20,23,25,29,34,37,39,45,50,51,65,68,73,77,79,83
<b>Jan 23</b>	<b>Last Day to Add/Drop Course</b>	
Jan 23 - 27	11 and 12	Ch12: 2,8,17,19,23,25,33,35,37,41,45,50,52,55,59,63,69,72,75,78,80,
Jan 30 - Feb 3	12	
Feb 6 - 7	Review	
<b>Feb 8</b>	<b>First Exam</b>	<b>Chapters 11, 12</b>
Feb 9 - 10	13	Ch13: 1,5,9,25,29,31,35,43,47,51,55,61,64,69,71,75,80,83,88,90,93,99,103,105,109,122,130,134,138,142
Feb 13 - 17	13	
<b>Feb 20</b>	<b>Presidents Day</b>	
Feb 21 - 24	14	Ch14: 1,9,11,15,17,19,23,28,31,35,39,43,45,47,53,55,58,62,65,71,74,81,84,86,89,93,97,105,107,110,115,118,120,122,125
Feb 27 – Mar 3	14 and 15 (intro)	
Mar 6 - 7	Review	

<b>Mar 7</b>	<b>Town Meeting Day</b>	
<b>Mar 8</b>	<b>Second Exam</b>	<b>Chapters 13, 14</b>
Mar 9 - 10	15	Ch15: 1,3,5,13,15,16,18,20,25,26,28,31,35,40, 51,55,56,59,60,63,68,72,77,78,81,84,85,87,90, 91,93,98,99,101,103,104,111,113,123,125,129 ,131,135,137,149
<b>Mar 13 - 17</b>	<b>SPRING BREAK</b>	
Mar 20 - 24	15	
Mar 27 - 31	15	
<b>Apr 3</b>	<b>Last Day to Withdraw from Course</b>	
Apr 3 - 4	Review	
<b>Apr 5</b>	<b>Third Exam</b>	<b>Chapters 15</b>
Apr 6 - 7	17	Ch17: 2,13,17,21,25,27,29,32,35,38,41,46,47, 49, 53,57,62,71,74,77,85,98
Apr 10 - 14	17	
Apr 17 - 21	21	Ch21: 9,19,24,26,28,33,39,41,47,49,65,68,77, 81,91,96
Apr 24 - 25	Review	
<b>Apr 26</b>	<b>Fourth Exam</b>	<b>Chapters 17,21</b>
Apr 27 - 28	21	
<b>May 3</b>	<b>ACS Assessment</b>	
May 1 - 5	Review	
<b>May 12</b>	<b>Cumulative Final Exam</b>	<b>(10:30am-1:15pm; Marsh Life 235)</b>

## Laboratory Schedule

<u>DATE</u>	<u>EXPERIMENT</u>
Jan 17 - 20	<b>No Lab</b>
Jan 23 - 27	Check In
Jan 30 - Feb 3	Molar Mass from Freezing Point Depression
Feb 6 - 10	Hot and Cold Packs
Feb 13 - 17	Iodination of Cyclohexanone
Feb 20 - 24	<b>Presidents Day - No Lab</b>
Feb 27 –Mar 3	Keq of FeSCN <sup>+2</sup>
March 6 - 10	<b>Town Meeting Day - No Lab</b>
Mar 13 - 17	<b>Spring Break - No Lab</b>
Mar 20 - 24	Thermodynamics of the Dissolution of Borax
Mar 27 - 31	Acid-base Equilibria and Buffers
April 3 - 7	Acid Neutralization of Anti-Acids
April 10 - 14	$K_{sp}$ of Copper (II) tartrate
April 17 - 21	Oxidizing Power of Bleaches
April 24 - 28	Electrolysis/Electroplating Check Out
May 1 – 12	<b>No Lab</b>

## **ACCESS Accommodations and Religious Holidays**

### Student Learning Accommodations Statement

In keeping with University policy, any student with a documented disability interested in utilizing accommodations should contact ACCESS, the office of Disability Services on campus. ACCESS works with students to create reasonable and appropriate accommodations via an accommodation letter to their professors as early as possible each semester.

Contact ACCESS: A170 Living/Learning Center - 802-656-7753 - [access@uvm.edu](mailto:access@uvm.edu).

ACCESS Office: <http://www.uvm.edu/~access/>

Policy on disability certification and student support:  
<http://www.uvm.edu/~uvmppg/ppg/student/disability.pdf>

### Religious Holiday Policy Statement

Religious Holidays: Students have the right to practice the religion of their choice. If you need to miss class to observe a religious holiday, please submit the dates of your absence to me in writing by the end of the second full week of classes. You will be permitted to make up work within a mutually agreed-upon time.

## **Illness Accommodations**

The Center for Health and Wellbeing does not provide students with notes verifying medical illness. This approach makes the best use of their limited medical resources by not having students who are required to provide verification of a recent illness utilize appointment times which can be used for students who require evaluation and therapy. Instead, contact your college's Dean's office so they can report your illness to all of your professors.

When students experience a serious illness requiring hospitalization or when an extended absence from class is foreseen, a Center staff member will (with the student's permission) notify the Dean's Office of the student's College or School so that faculty members can be made aware and the student supported in working successfully through the absence.