# CHEM 31D (90937): General Chemistry Fall 2014

## I. Lecture

**Lecturer:** Erik Ruggles, Ph.D. **Office:** A237 Cook **Email:** Erik.Ruggles@uvm.edu

**Office Hours:** M W F: 12:45 – 2:45 pm T Th: 9:00 – 11:00 am T: 6:00 – 7:00 pm or by appointment

**Lecture Time:** M W F: 3:00 – 3:50 pm **Location:** Angell B106

**Exam/Recitation Time:** T: 7:00 – 10:00 pm (varies) **Location:** Varies, see below

**Lecture:** The lecture each week will be used primarily to cover new material. My class lecture notes for the entire semester are posted on Blackboard.

**Textbook:** "Chemistry, A Molecular Approach" 3nd Ed., by Nivaldo Tro can be purchased at the UVM bookstore (2nd UVM Custom Edition). The solutions manual comes with the text and has the complete solutions to all the assigned problems.

**Homework Problems:** Answers to problem sets and exercises are in the solutions manualI strongly encourage you to do as many problems as possible. The homework combines mathematics with scientific concepts and are challenging, so the more you practice the better you will get. Blank old exams from my 2012 and 2013 General Chemistry classes as well as their answer keys are posted on Blackboard. These are a great way to evaluate what you understand and what you do not. ***Remember that test questions will change but the format and concepts will remain the same.***

**Recitations:** There are two recitations for this course. 1) You will be assigned a mandatory recitation session. Students must attend the recitation section they are assigned to. These teaching assistant led mandatory recitations will discuss specific homework problem sets from week to week. ***Quizzes will also be given in most, but not all, of these sessions.*** Students must attend the recitation section they are assigned to. If more than two recitations are missed you will receive an **F** for the course. 2) I, personally, will hold recitations on Tuesdays evenings from 7:00-8:00 pm in Angell B106, when there is not an exam. The Sunday before a mid-semester exam I will hold an exam 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. ***These recitation/review sessions are meant to address your questions and test your preparedness about lecture topics and/or homework problem solving, so come prepared.***

**Exams:** The exams are scheduled to be ***Tuesday evenings from 7:00-9:45 pm in Rowell 103 (Last Name: A—Q) or Marsh Life Sciences 235 (Last Name: R—Z)***. 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. ***Students caught using any other electronic device other than a non-programmable non-graphing calculator will receive a zero for the exam.***

**Exam Dates:**

| | |
|---|---|
| September 16 | Chapters 1, 2, 3, 4 (sections 1-6), 9.6 |
| October 21 | Chapters 5, 6, 7, 8 |
| November 18 | Chapters 9, 10.1-10.8, 11 |
| December 12 | **Final Exam** (*cumulative*) Angell B106 1:30 - 4:30 pm |

# II. Laboratory

**Lab Manuals:** "Chemistry 31, Experiments", 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). 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.

**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=31Videos.html.

# III. Course Grade

**Percent Ranges for Grades:**

| | | | | | | |
|---|---|---|---|---|---|---|
| A+ ≥ 96 | A ≥ 90 | A- ≥ 88 | B+ ≥ 85 | B ≥ 80 | B- ≥77 | C+ ≥72 |
| C ≥ 65 | C- ≥ 63 | D+ ≥ 60 | D ≥ 56 | D- ≥ 53 | F ≤ 51 | |

**How to Calculate Your Points:**

1) Class = 500 points

| | |
|---|---|
| 3 Mid-Semester Exams | = 300 points |
| 4 Mid-Semester Quizzes | = 100 points |
| + 1 Final Exam | = 100 points |
| 5 grades | = **500 class points** |
| 500 points x 1.6 | **= 800 scaled class points** |

There are five grades that are counted for your class points. If your final is your lowest grade it will count only as 100 points. If one of the hour exams is your lowest grade then your final will count as 200 points. 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 | Quizzes | Final X2 | |
|---|---|---|---|---|---|---|
| Actual Scores | 85 | 45 | 78 | 77 | 75 | 75 |
| Scores Counted | 85 | 75 | 78 | 77 | 75 | |

Total Points = 390 class points x 1.6 = 624 scaled class points

Example 2:

| | Exam 1 | Exam 2 | Exam 3 | Quizzes | Final X2 | |
|---|---|---|---|---|---|---|
| Actual Scores | 67 | 78 | 76 | 69 | 62 | 62 |
| Scores Counted | 67 | 78 | 76 | 69 | 62 | |

Total Points = 352 class points x 1.6 = 563 scaled class points

2) Laboratory = **200 lab points**

| | |
|---|---|
| Prelab (2 pts/per) | 18 points |
| Lab Reports (10 pts/per) | 100 points |
| Quizzes (8 pts/per) | 72 points |
| Lab Safety Quiz | 10 points |
| | 200 points |

(Obtained from the lab TA, the average grade is normally an 80% or 160 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. There are 1,000 total course points.

Example 1:

624 class points

\+ 160 lab points

784 total points ÷ 1000 possible points = 78.4% B-

Example 2:

563 class points

\+ 160 lab points

723 total points ÷ 1000 possible points = 72.3% C+

## 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.**

# IV. Lecture Schedule and Chapter Homework

| Dates | Chapters | End-of-Chapter Homework Problems |
|---|---|---|
| Aug. 25-Aug.29 | 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 |
| Sept. 1 | **LABOR DAY HOLIDAY** | |
| Sept. 2-Sept. 5 | 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 |
| | 3 | Ch3: 2 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 |
| | 9.6 | Ch9: 19 |
| **Sept. 8** | **LAST DAY TO ADD/DROP COURSE** | |
| Sept. 8-Sept. 12 | 3 and 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 |
| Sept. 15 | REVIEW | |
| **Sept. 16** | **EXAM 1** | **Chapters 1, 2, 3, 4.1-4.6, and electronegativity 9.6** |
| Sept. 17-Sept. 19 | 5 | Ch5: 4, 9, 29, 33, 35, 37, 40, 41, 44, 46, 48, 51, 55, 59, 61, 63, 67, 71, 73, 76, 79, 81, 83, 87, 92, 93, 97, 100, 104, 105, 108, 117, 122 |
| Sept. 22-Sept. 26 | 5 and 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, |
| Sept. 29-Oct. 3 | 6 | |
| Oct. 6-Oct. 10 | 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, |
| Oct. 13-Oct. 17 | 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 |
| Oct. 20 | REVIEW | |
| **Oct. 21** | **EXAM 2** | **Chapters 5, 6, 7, 8** |

| Dates | Chapters | End-of-Chapter Homework Problems |
|---|---|---|
| Oct. 22-Oct. 24 | 9.1-9.3,9.5,9.7-9.9 | 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 |
| **Oct. 27** | **LAST DAY TO WITHDRAW FROM COURSE** | |
| Oct. 27-Oct. 31 | 10.1-10.3 | Ch10: 1,5,9,14,16,31,34,36,39,42,46,50,53, 57,63,86,92,95 |
| Nov. 3-Nov. 7 | 10.4-10.7 | |
| | 9.4 | Ch9: 9,11,33,40,46,48,89,114 |
| | 9.10 | Ch9: 73,75,78,98 |
| Nov . 10-Nov. 14 | 10.8 | Ch10: 23,25,28,71,75,77 |
| | 11 | Ch11: 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 |
| Nov. 17 | REVIEW | |
| **Nov. 18** | **EXAM 4** | **Chapters 10.1-10.8, 9.4, 9.10, 11** |
| Nov. 19-Nov. 21 | REVIEW | |
| **Nov. 24-Nov. 28** | **THANKSGIVING HOLIDAY** | |
| Dec. 1-Dec. 3 | REVIEW | |
| **Dec. 2** | **ACS Assessment** | |
| **Dec 12** | **Final Exam (*cumulative*) Angell B106 1:30 - 4:30 pm** | |

# V. Laboratory Schedule

| Date | Experiment | Description |
|---|---|---|
| Aug 25 – 28 | **No Labs** | Purchase breakage card, lab manual and safety glasses<br>On Blackboard, review and complete the Safety Presentation and Safety Quiz |
| Sept 1 – 4 | **No Labs** | ***All above must be completed before the first laboratory period*** |
| Sept 8 – 11 | 1 | Measurement and Density |
| Sep 15 – 18 | 2 | Determination of Chemical Formula |
| Sep 22 – 25 | 3 | Chemical Reactions |
| Sept 29 – Oct 2 | 4 | Acid Content of a Food Product |
| Oct 6 – 9 | 5 | Synth. and Ident. of Coordination Cmpd |
| Oct 13 – 16 | 6 | Gas Law Determination of MW |
| Oct 20 – 23 | 7 | Heat Capacity of a Calorimeter |
| Oct 27 – 30 | 8 | $\Delta H°_f$ of MgO |
| Nov 3 – 6 | 9 | Qualitative Analysis 1 |
| Nov 10 – 13 | 9 | Qualitative Analysis 2 |
| Nov 17 – 20 | 10 | Flame Emission Spec of Metals<br>**Checkout** |
| Nov 24 – 28 | **THANKSGIVING HOLIDAY** | |
| Dec 1 – 3 | **No Labs** | |

# V. 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.*

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.*