# CHEM 31 (60053): General Chemistry Summer 2018

## I. Lecture

**Lecturer:** Erik Ruggles, Ph.D. **Office:** Hills 105

**Email:** Erik.Ruggles@uvm.edu **Office Hours:** Mon-Thurs, 12:00pm – 1:00pm

**Lecture Time:** Mon-Fri, 9:00am – 12:00pm **Location:** Stafford 101

**Lecture:** The lecture each week will be used to cover new material and concepts along with sample problem solving. My class lecture notes for the entire semester are posted on Blackboard.

**Textbook:** There are three options to purchase "Chemistry Structure and Properties" 2nd Ed., by Tro (Full text ISBN-13: 978-0-13-429393-6) along with Mastering Chemistry online access (Mastering not required for summer). 1) It can be purchased at an online site (~$300; text and mastering), or 2) at the UVM bookstore (~$160; text, solutions manual, and mastering), or 3) digital access (~$120; etext and mastering). The digital solutions manual will be provided for free but also comes with the UVM package and has the complete solutions to all the assigned problems. The most bang for your buck is the UVM bookstore package.

**Problems:** Problem sets will be assigned after each lecture and a complete list for the textbook can be found on page 5 of the Syllabus. I strongly encourage you to do as many problems as possible, the more you practice the better you will get. Also, blank old exams from my 2016 and 2015 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 though that test questions will change but the format and concepts will remain the same. ***Do not study with just the old exams!*** Also there are sample homework problem videos posted on Blackboard for extra "at-home" help.

**Recitations:** Throughout the semester I will also hold recitations on Thursday afternoons from 1:00-2:30pm in Stafford 101. These problem sessions are meant to address your specific questions about lecture topics and/or homework problem solving, so come prepared with questions.

**Exams:** The exams are scheduled to be on either ***Friday mornings from 9:00am-12:00pm in Stafford 101***. There are no scheduled make up dates. 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:**

Exam 1 May 25 (Friday)

Exam 2 June 1 (Friday)

Exam 3 June 8 (Friday)

Final Exam June 15 (Friday)

# II. Laboratory

**Lecture Time:** Mon – Wed, 1:00– 4:00pm **Location:** Discovery Bldg. W205, W207, or W208

**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 the Discovery Building stockroom. ***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.

**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: https://www.youtube.com/channel/UC8r6fR2K-8xAtsf-_a8edMg.

# 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 ≤ 53 | |

**How to Calculate Your Points:**

1) Class = **750 total points** (75% of grade; exams and homework)

1a) Mid-Semester Exams = **525 points** (175 points/exam)

1b) Final Exam = **225 points**

There are three mid-semester exams (each 175 points) and a final exam (225 points). If your final is your lowest grade it will count only as one unit. If one of the mid-semester exams is your lowest grade then your final will count as two units. The lowest mid-semester exam grade will be replaced by the percentage 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 | Final |
|---|---|---|---|---|
| Actual: | 148.75 (85%) | 78.75 (45%) | 136.5 (78%) | 168.7 5 (75%) |
| Counted: | 148.75 (85%) | 131.25 (75%) | 136.5 (78%) | 168.75 (75%) |

Total = 585.25 points

Example 2:

| | Exam 1 | Exam 2 | Exam 3 | Final |
|---|---|---|---|---|
| Actual: | 122.5 (70%) | 136.5 (78%) | 133.0 (76%) | 153.0 (68%) |
| Counted: | 122.5 (70%) | 136.5 (78%) | 133.0 (76%) | 153.0 (68%) |

Total = 545.0points

2) Laboratory = **250 lab points** (25% of grade)

| | |
|---|---|
| Safety Quiz | 1 point |
| Prelab (3 pts/per) | 27 points |
| Lab Reports (15 pts/per) | 150 points |
| Quizzes (8 pts/per) | 72 points |
| | 250 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:

585.25 class points

\+ 200 lab points

785.25 total points/1000 points = 78.25% B-

Example 2:

545.0 class points

\+ 200 lab points

745.00 total points/1000 points = 74.50% C+

**To summarize:**

[(Ex1 + Ex2 + Ex3 + Final + Homework + Lab = Total Points

(Total Points)/1000] x 100 = Total Percent

**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 |
|---|---|---|
| May 21 | E and 1 | ChE: 19,21,23,25,27,29,33,37,39,41,45,47,49,51,53, 55,59,61,65,71,73,75,79,81,87,89,91,95,99,<br><br>Ch1: 35,39,43,45,49,53,55,57,59,61,63,65,67,71,75, 77,79,83,85,87,89,91,93,97,103,105,107,109,117, |
| May 22 | 1 and 2 | Ch2: 35,37,39,41,43,51,53,55,57,59,61,63,65,67,69, 71,73,79,85,89,91 |
| May 23 | 2 | |
| May 24 | 3 | Ch3: 41,43,45,47,49,51,53,55,57,59,61,63,65,67,69, 71,73,75,77,79,81,83,87,89,91,93,95,97,101,103,109, 115,127,135 |
| **May 25** | **EXAM 1*** | **Chapters 1, 2, and 3** |
| May 28 | **Memorial Day Holiday** | |
| May 29 | 4 | Ch4: 29,31,33,35,37,39,43,45,47,49,51,53,55,57,61, 63,65,67,69,71,75,77,79,83,87,93,95,97,101,103,105, 109,111,117,119,121,123,125,127,137 |
| May 30 | 5 | Ch5: 23,25,27,29,31,35,37,41,43,45,47,49,51,53,55, 57,59,61,63,65,69,71,73,75,79,81,83,85,91,95,97,99, 101 |
| May 31 | 5 and 6 | Ch6: 25,29,31,33,35,39,41,43,45,49,51,53,55,57,59, 61 |
| **June 1** | **EXAM 2*** | **Chapters 4, 5, 6 and 11** |
| June 4 | 11 and 7 | Ch11: 35,37,39,41,43,45,47,49,51<br><br>Ch7: 15,17,19,21,23,25,27,29,31,33,35,37,39,41,43, 45,47,49,53,55,57,61,63,65,67,69,71,75,81,85 |
| June 5 | 7 and 8 | Ch8: 21,23,25,27,29,31,33,35,37,39,41,43,45,47,49, 51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,87, 91,93,99 |

*Extent of exam material will depend on our progress in lecture.

| | | |
|---|---|---|
| June 6 | 8 and 9 | Ch9: 31,33,35,37,39,41,43,45,47,49,51,53,57,59,61, 63,65,67,69,71,73,75,77,79,81,83,85,87,89,91,93,95, 99,101,107,111,113,117,119,123 |
| June 7 | 9 | |
| June 8 | **EXAM 3*** | **Chapters 7, 8, and 9** |
| June 11 | 10 | Ch10: 25,29,31,33,35,37,39,41,43,45,47,49,51,53,55, 57,59,61,63,67,69,71,73,77,79,81,83,85,87,89,91,93, 95,99,101,105,107,113,123,125,127 |
| June 12 | 11 Review | Ch11: 53,57,59,61,63,65,67,69,71,73,77,81,85,87,93 |
| June 13 | Review | |
| June 14 | Review | |
| **June 15** | **Final Exam** | **Cumulative** |

*Extent of exam material will depend on our progress in lecture.

# V. Laboratory Schedule

| Date | Experiment | Description |
|---|---|---|
| May 21 | **Check In** | Purchase breakage card, lab manual and safety glasses<br>On Blackboard, review and complete the Safety Presentation and Safety Quiz |
| | Recitation 1 | (Chap E-1) |
| May 22 | Experiment 1 | Density Determination |
| | Recitation 2 | (Chap 2) |
| May 23 | Experiment 2 | Flame Emission Spec of Metals |
| | Recitation 3* | (Chap 3) |
| **May 28** | **Memorial Day Holiday** | |
| May 29 | Experiment 3 | Ionization Energy/Atomic Radius |
| | Recitation 4 | (Chap 3) |
| May 30 | Experiment 4 | Determination of a Chemical Formula |
| | Recitation 5 | (Chap 4) |
| June 4 | Experiment 5 | Chemicals Models (VSEPR) |
| | Recitation 6 | (Chap 5) |
| June 5 | Experiment 6 | Intermolecular Forces of Attraction |
| | Recitation 7 | (Chap 6,11) |
| June 6 | Experiment 7 | Chemical Reactions |
| | No Recitation | (Long Lab) |
| June 11 | Experiment 8 | Acid Titration of a Food Product |
| | Recitation 8 | (Chap 7 and 8) |
| June 12 | Experiment 9 | Heat Capacity of a Calorimeter |
| | Recitation 9 | (Chap 9) |
| June 13 | Experiment 10 | Gas Law Determination of MW |
| | Recitation 10 | (Chap 10) |
| | **Check Out** | |

## 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.*

# 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.