CHEM 31 (60064): General Chemistry Summer 2020*

I. Lecture

Lecturer: Erik Ruggles, Ph.D.

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Email: Erik.Ruggles@uvm.edu

Office Hours: Mon-Thurs, 8:00am-11:00am (Virtual Chat; Zoom or Teams)

Virtual Class Time: Mon-Thurs (8am-11am) **Location:** Your Work Station

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. 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 (2), but the most economical is digital access (3).

Lecture: The video lectures for discussions Monday-Thursday will be used to cover new material and concepts along with sample problem solving. They will be assigned the day before virtual class meetings and you are expected to watch the lecture prior to virtual class time. My video lecture notes will also be posted in pdf format on BlackBoard.

Assignments: The assignments are broken down into Modules. Each module contains Lecture Videos, Textbook Sections Covered and Homework Problem Sets. They will be assigned the day before virtual class meetings and you are expected to do your best to complete the module prior to virtual class time. I strongly encourage you to do as many problems as possible, the more you practice the better you will get.

Virtual Class Time: Class will be held virtually from 8am-11am Monday-Thursday. Class is meant for question and answers. The module assigned should be finished prior as I want to use this time to clarify lecture concepts and homework problems. I will be omnipresent on Discussion Boards (within BlackBoard) for question and answer. I will also be available by email as much as possible.

Extra Practice: For added examples, blank old exams from my 2018 and 2017 classes, SI Sessions, as well as their answer keys are posted on BlackBoard. Remember that even though questions will change from year to year, the concepts will remain the same. ***Do not study with just the old exams!*** The Meat and Potatoes, or Seitan and Broccoli, is in the Homework Problems. Also there are homework problem videos posted on Blackboard for extra "at-home" help.

Exams: The exams are scheduled to be on either ***Friday mornings from 9:00am-12:00pm (there will be some time flexibility).*** There are no scheduled make up dates. Only non-programmable non-graphing calculators are permitted. No other electronic devices are allowed.

Exam Dates:

Exam 1 May 22 (Friday)	Exam 3 June 5 (Friday)
Exam 2 May 29 (Friday)	Final Exam June 12 (Friday)

*All times are Eastern Standard

II. Laboratory

Lecture Time: Mon – Wed **Location:** Your Workstation

Lab BlackBoard: You will have access to the lab portion of this course through BlackBoard as well. The site is run by our Lab Director Christine Cardillo (Christine.Cardillo@uvm.edu). The Lab BlackBoard site will open sometime before the beginning of the summer semester. *Don't worry you'll be notified.* Here is where you will find experimentals, helpful documents, Labflow connection, TA Discussion Boards, logistics, etc. Here is also where you will hand in materials, such as Pre-Lab questions, Lab Reports and Post-Lab questions.

Lab Manuals: All experiments can be found online on your lab's BB website as individual pdfs and/or connections to the Labflow Online Platform. Please make sure you thoroughly go through the actual experimental before attacking the labs**.**

Lab Notebook: We used to require a notebook with carbon-less copies 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. However, any notebook can be used for our Virtual environment.

Prior to Start of Lab: Purchase your "lab notebook". You will be using the Labflow Online Platform for the experiential part of the lab. ***If you have not completed these items you will not be able to begin the lab portion of the course.***

Attendance and Lab Reports: Students must hand in their Lab Reports for each experiment. ***If more than three Lab Reports are not handed in 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 or time extension.

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%)	168.75 (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)

There are 10 lab experiments, each worth 25 points total which will be split into Pre-Lab questions (10 points), Lab Report and Post-Lab questions (15 points). Roughly we see an 80% average (~200 points) in labs.

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 + Lab + Extra Credit = 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. Tentative Lecture Schedule and End-of-Chapter Homework

Dates	Chapters	Homework Problems (Learning Objectives)
May 18	Syllabus	(Class Dynamics)
	E	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, (ModuleE: Dimensional Analysis, Conversions, Significant Figures and Density)
	1	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, (Module1: History and Current Understanding of Atoms, Elements and Molecules, The Mol)
May 19	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 (Module2: Light, Energy and Fireworks, Quantum Mechanical View of the Atom)
May 20	2	
May 21	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 (Module3: Electron Configurations and Periodic Trends)
May 22	**EXAM 1****	**Chapters E, 1, 2, and 3**
May 25	**Memorial Day Holiday**	
May 26	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 (Module4: Molecules and Molecular Molar Mass, Nomenclature and Determination of Molecular Formulas.
May 27	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 (Module5: Bonding, Resonance, Lewis Octet Theory, VSEPR Theory, Molecular Shape and Polarity)

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

May 28	5 and 6	Ch6: 25,29,31,33,35,39,41,43,45,49,51,53,55,57,59, 61 (Module6: Valence Bond Theory and Molecular Orbital Theory)
May 29	**EXAM 2****	**Chapters 4, 5, 6 and 11**
June 1	7	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 (Module7: Chemical Reactions, Balancing, Stoichiometry, Limiting Reagent, Theoretical Yield and Percent Yield)
	11	Ch11: 35,37,39,41,43,45,47,49,51 (Module11a: Forces of Attraction and the Physical Properties they control)
June 2	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 (Module8: Solution Concentration, Aqueous Reactions, Precipitation, Acid-Base, Gas-Evolution and Reduction-Oxidation Reactions)
June 3	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 (Module9: Thermodynamics, Calorimetry and Enthalpy)
June 4	9	
June 5	**EXAM 3****	**Chapters 7, 8, and 9**
June 10	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 (Module10: Simple Gas Laws and Ideal Gas Law, Dalton's Law of Partial Pressures, Gas-Reaction Stoichiometry and Real Gases
June 11	11 Review	Ch11: 53,57,59,61,63,65,67,69,71,73,77,81,85,87,93 (Module11b: Temperature Dependence, Vapor-Pressure Heating Curve for Water and Phase Diagrams

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

June 12	Review	
June 13	Review	
June 14	**Final Exam**	**Cumulative**

V. Laboratory Schedule

Date	Experiment	Description
May 18	**Check In**	
	Experiment 1	Chemistry Glassware and Measurement
	Lecture Correlation	Module E
May 19	Experiment 2	Separating Components of a Mixture
	Lecture Correlation	ModuleE and Module1
May 20	Experiment 3	Visible Spectra and the Nature of Light and Color
	Lecture Correlation	Module2
May 25	**Memorial Day Holiday**	
May 26	Experiment 4	Identification of a Halide
	Lecture Correlation	Module3 and Module4
May 27	Experiment 5	Determination of an Emperical Formula
	Lecture Correlation	Module4
June 1	Experiment 6	Molecules and their Bonds
	Lecture Correlation	Module5 and Module6
June 2	Experiment 7	Chemistry of Copper and Percent Yield
	Lecture Correlation	Module7
June 3	Experiment 8	Volumetric Analysis
	Lecture Correlation	Module8
June 8	Experiment 9	Constant Pressure Calorimetry
	Lecture Correlation	Module9
June 9	Experiment 10	Ideal Gas Law
	Lecture Correlation	Module10
June 10	**Check Out**	

VI. ACCESS Accommodations

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

VII. Religious Holidays

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.

VIII. 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.