

Dr. Loza

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Chemistry 162

Winter Quarter 2010

Schedule of Assignments

MWF 8:30 – 9:18 AM

1000 McPherson Lab

Website: carmen.osu.edu

Textbook: Chemistry, The Central Science (Eleventh Edition), by Brown, LeMay, Bursten and Murphy
Lab Manual: General Chemistry Laboratory Experiments, Volume 2 (2009), by Casey and Tatz
Lab Notebook: Student Lab Notebook, Hayden-McNeil Publishing, Inc.
Prerequisite: Chemistry 121 or completion of 101 with a grade of A or A- and eligibility to enroll in Math 151.
Calculator: For quizzes and examinations, the use of a calculator is restricted to a TI-30 (any, except XS Multi view), Sharp EL-509 (any), Sharp EL-531(any) or Casio FX-250 (any). **No other calculators are permitted.**
See <http://undergrad-ed.chemistry.ohio-state.edu/calculators/>.

<u>Week of</u>	<u>Lecture Topic</u>	<u>Chptr</u>	<u>Quiz</u> <u>T/W/R</u>	<u>Laboratory</u> <u>T/R/F</u>
Jan. 5	Gas Laws, Ideal Gases, Applications, Dalton's Law, Kinetic Molecular Theory	10	Attend	11, Ckin
Jan. 12	Real Gases, Effusion, Diffusion, Intermolecular Forces, Liquids, Vapor Pressure	10, 11	I	12
Jan. 19*	Phase Diagrams Solid Structures and Bonding, Modern Materials	11,12	II	13
Jan. 26	Solution Process, Solubility, Solubility Factors, Concentration, Colligative Properties	13	III	15
Feb. 2	Colligative Properties, Colloids, Reaction Rates, Effect of Concentration on Rate	13, 14	Attend	16
FIRST MIDTERM EXAMINATION - Tuesday, February 3rd, 6:30 – 7:48 PM				
Feb. 9	Integrated Rate Laws, Arrhenius Equation, Mechanisms, Catalysis, Equilibrium, K	14, 15	Attend	17
Feb. 16	K Calculations (ICE), Reaction Quotient (Q), LeChatelier's Principle, Acid-Base Review	15, 16	IV	18
Feb. 23	Bronsted-Lowry Concept, The pH Scale, Strong & Weak Acids and Bases, Solutions of Salts	16	Attend	19
SECOND MIDTERM EXAMINATION - Tuesday, February 24th, 6:30 – 7:48 PM				
Mar. 2	Acidity & Structure, Lewis Concept, Common Ion Effect, Buffers	16, 17.1-17.2	V	20
Mar. 9	Buffers, Titrations, Environmental Chemistry	17-17.3, 18	VI	FCO
FINAL EXAMINATION - Tuesday, March 17th, 7:30 – 9:18 AM				

* January 19th is a University holiday. No classes will be held. University offices are closed.

** Ckin = Check-in. SFU = Significant Figures & Units (pg 33). FCO = Finish, Check-Out. x = lab closed.

Lab Reports for Expts. 11, 12, 13, 15 & 16 will not be accepted after Friday, February 27th. (See reverse for late penalty details.)
All other Lab Reports are due no later than 4:30 PM, Friday, March 13th. (See reverse for late penalty details.)

MEDICAL INSURANCE COVERAGE: Due to the potentially dangerous nature of laboratory work, you are reminded to maintain medical insurance coverage through OSU health service or a private agency when enrolling in Chemistry laboratory courses.

ACADEMIC MISCONDUCT: Any material submitted in General Chemistry must represent your own work. Apparent violations of this standard will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules. *Please read the attached statement on Standards of Academic Conduct carefully and take the quiz in Carmen.*

IF YOU FAIL TO ATTEND THE FIRST LAB SESSION - CHECK IN AT 100 CE WITHOUT DELAY

STUDENT RESPONSIBILITY: Each student receives this information in the first lecture section. It is your responsibility to read this material and be familiar with the course content, procedures, and grading. You are also responsible for any announcements concerning course procedures which are made in class, whether you are present or not! (If you are absent, you are expected to get notes, announcements, etc. from another student in the class.)

GRADING: Your performance in the course will be evaluated on the basis of total points earned. There is **NO** extra credit. The distribution of points is as follows:

Quizzes	150	
Laboratory	200	◀ A minimum of 50% of the total lab points is required to pass the course.
Midterm I	175	
Midterm II	175	
Final	<u>300</u>	
Total	1000 pts.	

QUIZZES: Will be given in recitation in the weeks indicated on the front of the syllabus. There are **NO** make-up quizzes but you are allowed to miss one quiz without receiving a penalty or needing permission from your instructor. If you take all of the quizzes, your lowest quiz score will be dropped. **ALWAYS SHOW YOUR WORK ON QUIZZES** to receive full credit. Bring your **approved calculator** to quizzes and exams. Calculator covers must be removed and put away.

MIDTERM EXAMS: These exams are given only at the times shown on the Schedule of Assignments. Make-up exams will be given **only** in the **last** week of regularly scheduled classes for medical reasons (documented) or a preapproved university conflict. Exams are a scheduled part of this course and attendance is required (exam location is based on lab section). Students with **University** conflicts should consult the lecturer. Answers will be posted.

FINAL EXAM: The final exam must be taken at the University scheduled time. OSU ID cards will be collected at the final exam. Final exams will not be returned.

LABORATORY: Consists of one 3-hour session per week; **YOU MAY WORK IN THE LABORATORY ONLY DURING YOUR SCHEDULED LABORATORY PERIOD!** Any time remaining in a lab period and the last lab (checkout) period can be used to complete a previous experiment - *discuss this with your TA first*. A minimum of 50% of the total lab points are necessary for a passing grade in the course.

LABORATORY NOTEBOOKS: Will be graded. You are required to use the Student Lab Notebook, and record all entries in ink. Record procedures followed, observations made and data collected, calculations, and results. The notebook should be sufficiently neat and organized so that another person can follow what you did. At the end of each lab, sign your data pages and submit the copies to your lab instructor in order to receive credit for the lab.

LABORATORY REPORTS: are normally due at the **beginning** of the lab session **ONE** week after the **completion** of the experiment. Late reports (even if on the same day) will be penalized 10% per day. If you submit a late report to 100 CE, you must notify your TA by email within one day after submission. **NO** credit will be given after 2 weeks or past the due dates shown on the first page. **If you do not check-out, you will receive a zero for your last lab report.** The lab score will be factored to 200 points. *Photocopies of the report sheets are not acceptable.*

LABORATORY SAFETY REQUIREMENTS: Students are required to read, understand, and implement the safety precautions indicated in the laboratory manual and laboratory handouts. The precautions are summarized on a safety form which must be signed by all students during their first laboratory period. The following are selected instructions from the safety form:

1. You must wear Department-authorized ANSI code goggles in the laboratory. Goggles will be issued during check-in. After the first free pair, goggles may be borrowed, if available, from CE 231 or 331; otherwise, they must be purchased from CE 180. Not wearing goggles will result in the loss of 10% of the grade for the experiment. For any subsequent violation, an additional loss of 10% of the grade will result. Continued violations may result in dismissal from the course. The wearing of contact lenses is NOT recommended.
2. Each student must adequate clothing to reduce the possibility of injury from chemicals or broken glass. Students who wear **sandals** or **shorts** will be **sent home** – **NO** make-up time will be provided.
3. Familiarize yourself with the location of the fire blanket, fire extinguisher, and eye wash in the laboratory.
4. Promptly report all accidents, no matter how small, to your lab instructor.
5. Your work area should be cleaned before you leave lab. After putting your equipment away, wipe down your work area with a wet sponge or towel. This ensures that you, and other students who use the space, will not be harmed by chemicals left on the desktop. Also clean up spills in the balance room by brushing chemicals into a weighing dish.
6. No unauthorized experiments are allowed. No chemicals may be removed from the lab.

HOMEWORK: Homework will not be graded; however, doing assigned problems is often the best way to determine how well you understand the material.

OFFICE HOURS: I will be available in my office Mondays, Wednesdays and Fridays from 9:30-10:45am and 12:30-1:30pm.

ADDITIONAL ASSISTANCE

1. Lab Supervisor - Dr. Tatz (rjtatz@chemistry.ohio-state.edu, 292-8096, 280D CE) will help with lab problems.
2. Extra copies of course handouts are available in the General Chemistry Office, 100 Celeste Lab.
3. **You are strongly encouraged to make use of the Learning Resource Center (160 CE) frequently.**
4. All students with documented disabilities, who need accommodations, should see the instructor privately to schedule an appointment as early as possible. If your disability requires materials in alternative formats, please contact the Office for Disability Services at 292-3307, Room 150 Pomerene Hall.
5. Undergraduate chemistry web site: <http://www.chemunder.chemistry.ohio-state.edu>

LEARNING RESOURCE CENTER (TA Aid Room) - 160 CE

The Center is open Monday through Friday during posted hours. Computers that have instructional programs for the General Chemistry classes are available on a first come, first served basis. These programs involve only single-concept problems that must be understood in order to deal with the more difficult multi-concept questions on examinations.

Teaching assistants spend two hours a week in the Center to provide contact time with their students and to answer specific questions about their course as well as general questions in any course. A schedule is posted outside the door which lists the time each T.A. is available as well as their course assignment. Teaching assistants wear a name tag which indicates the course for which they are responsible. There are also two side rooms, 160A and 160C where T.A.'s may be present. The Center has limited space and is not designed as a library or study hall but as a place where students can come for individual instruction and help.

LABORATORY VIDEO INSTRUCTION

Laboratory videos are shown at the start of the laboratory. Students must view the entire video prior to starting the experiment. Students who are late for laboratory will have to view the video on the computers in the **Learning Resource Center - 160 CE**. A form will be printed in 100 CE which should be picked up and given to the TA in lab.

The videos are designed to supplement the instructions in the laboratory manual. Students will be better prepared to assimilate the video instructions if they have read the laboratory manual prior to the laboratory. The videos are short and there is insufficient time to take detailed notes if you are not already familiar with the experiment. You are encouraged to view the tapes at your own pace either before or after laboratory. The list of videos for this course and run times are as follows:

<i>Expt. #</i>	<i>Title of Video for Chemistry 162</i>	<i>Time</i>
CKIN	Safety in the Laboratory	07:48
11	Calorimetry and Hess's Law	15:02
12	Vapor Density and the Gas Laws	12:53
13	Vapor Pressure and Enthalpy of Vaporization	10:21
15	Variation of Solubility with Temperature and Solvent	---
16	Freezing Point Depression	06:44
17	Spectrophotometric Determination of Cr and Kinetics	10:42
18	Temperature Dependence of a Rate Constant	09:40
19	Equilibria in Chemical Reactions	10:18
20	Quantitative Analysis of a Solution of Two Acids	11:30

Chem 162 is a Physical Science course in the Natural Science category of the GEC, which has these goals and objectives:

Goals/Rationale: Courses in natural sciences foster an understanding of the principles, theories and methods of modern science, the relationship between science and technology, and the effects of science and technology on the environment.

Learning Objectives:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students learn key events in the history of science.
3. Students provide examples of the inter-dependence of scientific and technological developments.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

STANDARDS OF ACADEMIC CONDUCT IN GENERAL CHEMISTRY

Any material submitted in General Chemistry must represent your own work. Violations of this standard will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules.

If you need assistance, check with the staff of the Department of Chemistry. Group efforts by students, use of another student's pre-laboratory or laboratory material, or assistance from individuals who already have taken the course may place you in jeopardy of violation of the standards of General Chemistry. Possession of another student's lab report(s) will raise immediate concerns about academic misconduct. Plagiarism or the submission of work based on old material is considered to be academic misconduct no matter how small the infraction. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words.

Individuals retaking the course must complete all work for the course during the current quarter and may not submit any parts of pre-labs or lab work or reports performed in a previous quarter (see item #6 in "Ten Suggestions for Preserving Academic Integrity", <http://oaa.osu.edu/coam/ten-suggestions.html>).

Pre-laboratory exercises are designed to make you prepare for the laboratory. Copying answers from other individuals or from old copies of the exercises does not prepare you properly for the laboratory. Evidence of copying or "working together" will be submitted to COAM. The minimum penalty recommended by the Department of Chemistry will be a zero for the pre-laboratory exercise and the accompanying experiment.

Laboratory work is the essence of the science of Chemistry; therefore laboratory work in General Chemistry is to be an individual effort. You will have your own locker/work space and you are expected to perform all parts of the experiments with your own equipment, chemicals and unknowns. The accumulation of data, calculations derived from that data and any conclusions or answers to questions associated with that experiment are to be your own work. Laboratory data may not be altered or "made up". All laboratory work must be done in your assigned laboratory room during your scheduled time period and be supervised by your assigned teaching assistant. You are required to have the data sheet/notebook signed by your teaching assistant during lab. Some courses require the submission of carbon copies of the lab notebook every lab period. Violations will be prosecuted with the minimum recommended penalty of a zero for the entire laboratory portion of the course. If a minimum grade in laboratory is required as stated on the syllabus of the course, the zero can result in an E for the entire course.

Copying, use of "crib" material or use of stored constants and formulas in calculators on quizzes, midterm examinations or the final exam, no matter how small the violation, is regarded as a severe violation of academic standards. The Department of Chemistry will recommend as the minimum penalty a grade of E for the course for any such violations. The use of improper calculators (those NOT listed on the syllabus as approved) may constitute academic misconduct. The staff will inspect calculators used in exams. During exams, students are seated with their lab section to facilitate proctoring of the exam.

Students supplying materials for others to "look at" may be charged with academic misconduct. Never allow another student access to your pre-laboratory exercises or lab reports even after completion of the course. You should not assist others in violations of academic standards. "I didn't know that the person was going to copy my work" is not an acceptable excuse.

There is a mandatory quiz on Academic Misconduct to be taken on Carmen - <https://carmen.osu.edu> Unless you receive a perfect score on the quiz, you will not receive a passing grade in this course. Please complete the quiz before the end of the first week of the quarter.

Chemistry 162 Pre-lab Assignments

Winter, 2009

These pre-lab assignments are part of your lab grade. They are due at the **beginning** of the lab period the experiment is started. You should prepare for each lab by reading the experiment, working the pre-lab problems and preparing your notebook. *Pre-labs from the lab manual should be written on a separate piece of paper.* **Pre-labs submitted after the lab is started will receive zero credit.**

<i>Expt #</i>	<i>Title</i>	<i>Pre-lab Assignment</i>	<i>Lab Points*</i>
11	Calorimetry and Hess's Law	Page 6 / 4 submit at end of 1 st lab period	110
12	The Ideal Gas Law: Determining Molecular Weight	Page 20-21 / 1, 3 b, 5 Computer pre-lab**	110
13	Vapor Pressure and Heat of Vaporization	Page 32 / 3, 5, 9 Computer pre-lab**	110
15	Variation of Solubility with Temperature and Solvent	Page 44 / 3, 4, 6, 8	110
16	Freezing Point Depression	Page 53 / 2, 5 Computer pre-lab**	110
17	Determining a Rate Law and Rate Constant	Page 64 / 1 a, b, 2, 3, 5	110
18	Variation of Reaction Rate with Temperature	Page 77 / 1 a, 2, 4, 5 Computer pre-lab**	110
19	Equilibria and Le Chatelier's Principle	Page 86-87 / 1 b, c, 2 a, 3, 5	110
20***	Quantitative Analysis of a Solution of Two Acids	Page 101 / 1, 5 Computer pre-lab**	110

* The laboratory points are factored by 200/990 to give 200 course points.

** Computer generated pre-labs (with unique values) are given out in lab one week prior to the exp. or can be picked up in 100 CE.

*** Monday labs will do Experiment 20 on the same day as check-out.

Notebooks - "Student Lab Notebook" (Hayden-McNeil Publishing). Must be written in ink.

Before lab: Experiment number and title
Purpose (one or two sentences)
Procedure (reference to pages in lab manual and brief outline)

During lab: All numerical data (must include label and units) --- *Recorded in Notebook first*
Other observations --- *Recorded in Notebook first, Not the lab manual*

At home: Calculations (*using your own data*)
Chemical equations
Results

Notebooks are graded each week as the experiment is being performed. Calculations, chemical equations and results will usually not be complete when the notebook is graded. Your **TA** will **sign** your work, write down your grade, and tell you how your notebook could be improved. The copies will be collected each lab period. Your **lab** notebook **sheets MUST be initialed** by your lab instructor **before leaving the lab** and given to the TA or your report will **NOT** be graded. For further information on lab notebooks and examples, see: <http://undergrad-ed.chemistry.ohio-state.edu/labnotebook/index.html>

Reports

Cover page containing experiment number and title, student's name, date exp performed, TA. name
Purpose; Procedure reference is sufficient (note any changes)
Report sheet torn out of lab manual (*Photocopies are not acceptable.*)
Sample calculations (*using your own data*)
Graphs if applicable
Answers to questions
Results or conclusion

Reports are due at the **beginning** of lab one week after the work is completed. A penalty of 10% per day is assessed for late labs. After **two weeks NO** credit will be given. Graded reports should be returned a week after submission - notify your lecturer if they are not. There is a cut-off date for the first four reports and a cut-off date for all reports.

For further information on lab reports and examples, see: <http://undergrad-ed.chemistry.ohio-state.edu/labreports/index.html>

HOMEWORK ASSIGNMENTS – LOZA – WINTER 2009

We will not collect your homework assignments. This does not mean they are optional. You need to do as many problems as possible to practice.

The 11th Edition of this text is supported by Mastering Chemistry. The access code was included in the purchase of your textbook. All End of Chapter Exercises appear in Mastering Chemistry. You will also find “Tutorials”. Tutorials walk you through concepts – with very helpful hints. Think of them as one-on-one tutors available day or night. Former students have found the tutorials to be VERY helpful. Set up an account and use this resource.

Chapter 10: 11, 12, 16, 18, 20, 24; 26, 28; 30, 32, 34, 35, 41, 43; 46-58 even; 59-61, 67, 70; 72-82 even; 83, 86, 88; 89, 90, 94, 98, 100, 106-108; 116, 119, 162

Chapter 11: 9-11; 13-28; 29-31; 34, 35, 39, 42; 43-49; 51,52, 54-56; 58, 60-63; 69-74, 76, 78; 79-86; 89, 90, 92, 94, 95; 100, 101

Chapter 13: 13-18; 22-32; 40, 44, 52; 57-60, 62, 64-68, 72, 74, 76, 77, 80; 81-86; 87- 89, 93, 99

Chapter 14: 13, 14, 18, 20, 22; 24-30 even, 34; 35, 36, 46; 47, 50, 52-54, 56, 60; 61, 62-70 even; 71, 72, 74, 75, 78-80; 87, 88, 91, 94, 95, 97, 100

Chapter 15: 11, 12-26 even; 28-34 even; 35, 36-50 even; 51-56; 58, 60, 63, 66, 67, 70, 73, 79

Chapter 16: 1-12; 14-28 even; 29-31, 33; 35-39, 41,42; 43, 44, 46, 48, 50; 51, 52, 54, 60, 62, 64, 67; 71, 72, 74, 76, 78; 79, 80-90 even; 91-98; 99, 100, 102, 104; 105-109, 111, 114, 116, 120

Chapter 17: 1-11; 13, 14, 16, 18; 19, 20-32 even; 33-38, 40, 42, 44

<p>WORKED SOLUTIONS ARE FOUND IN CARMEN UNDER THE LINKS TAB</p>

It is strongly recommended that you READ and outline the sections to be covered BEFORE each lecture

Week of	Monday	Wednesday	Friday	<u>Recitation</u>
Jan 5	10.1-10.3	10.3-10.5	10.5-10.7	Attend
Jan 12	10.7-10.9, 8.4	11.1-11.3	11.4-11.5	Quiz 1
Jan 19	OFF	11.6-11.7	11.7-11.8	Quiz 2
Jan 26	12, 13.1-13.2	13.2-13.3	13.4-13.5	Quiz 3
Feb 2	13.5-13.6	14.1-14.3	14.3-14.4	Attend
Feb 9	14.4-14.5	14.6-14.7	15.1-15.3	Attend
Feb 16	15.3-15.5	15.5-15.6	15.7, 16.1	Quiz 4
Feb 23	16.2-16.5	16.6	16.7-16.9	Attend
Mar 2	16.9-16.10	16.11, 17.1	17.1-17.2	Quiz 5
Mar 9	17.2-17.3	17.3, 18.1-18.3	18.4-18.6	Quiz 6

Each Quiz is worth 30 points, the best 5 quiz scores are counted towards your grade.

Quiz 1 (week of Jan 12): Chapter 10.1-10.6

Quiz 2 (week of Jan 19): Chapters 10, 11.1-11.5

Quiz 3 (week of Jan 26): Chapter 11

Quiz 4 (week of Feb 16): Chapters 14, 15.1-15.3

Quiz 5 (week of Mar 2): Chapter 16

Quiz 6 (week of Mar 9): Chapters 16, 17.1

Midterm 1 (Tuesday, Feb 3, 6:30-7:48 pm): Chapters 10, 11, 13, 14.1-14.3

Midterm 2 (Tuesday, Feb 24, 6:30-7:48 pm): Chapters 14, 15, 16.1

All midterm exams must be taken on Feb 3 and Feb 24. If you have a conflict, I need a copy of your OSU grid schedule by Friday, Jan 23. In lecture please, no email.

Final Exam: 1/3 MT1, 1/3 MT2, 1/3 Chapters 16, 17, 18