

Textbook: "Chemistry, The Central Science", Brown, LeMay and Bursten (10TH EDITION)
 Lab Manual: "General Chemistry Laboratory Experiments, Volume 1", Casey and Tatz (2007-2008)
 Lab Notebook: "Student Lab Notebook", Hayden-McNeil Publishing, Inc.
 Calculator: For quizzes and examinations, the use of calculators is restricted to ANY TI-30; Sharp EL-509; Sharp EL-531; OR Casio FX-250. **NO OTHER CALCULATORS ARE PERMITTED.**
 3-D glasses: 3-D glasses (available at the bookstore near book) will be necessary to view web-based assignments
 Prerequisite: One unit of high school chemistry and eligibility to enroll in Math 150.

<i>Week of</i>	<i>Lecture Topic</i>	<i>Reading</i>	<i>Rec/Quiz</i>		<i>Lab Experiment**</i>	
		<i>Chapter</i>	<i>M</i>	<i>W / F</i>	<i>M</i>	<i>W / F</i>
Sept. 19	Nomenclature, Significant Figures, Dimensional Analysis, Atoms	1	x	Act.	x	CKIN, 1
Sept. 24	Molecules & Ions, Chemical Reactions; Formula, Molecular Weights	2	Act.	Act.	CKIN, 1	2
Oct. 1	Moles, Empirical Formulas, Reaction Stoichiometry, Solutions, Concn.Definitions, Electrolytes, Ionic Equations	3	I	I	2	3
Oct. 8	Precipitation, Oxid. Numbers, Balancing Redox Equations, Solution Stoichiometry, Limiting Reagents, Titrations	4	II	II	3	4
Oct. 15	Quantum Mechanics, The Bohr Atom, Orbitals	6.1-6.5	III	III	4	5
Oct. 22	Light, Line Spectra, Quantum Numbers, Atomic Orbitals, Electron Configurations and the Periodic Table	Ch. 6	Act.	Act.	5	6

FIRST MIDTERM EXAMINATION - Tuesday, October 23, 11:30 AM to 12:48 PM

Oct. 29	Periodic Trends, Selected Metals and Nonmetals, Chemical Bonds	Ch. 7, 8	IV	IV	6	7
Nov. 5	Lewis Symbols, Octet Rule, Ionic & Covalent Bonding, Bond Polarity, Electronegativity, Lewis Structures, Resonance	Ch. 8	V	V	7	8
Nov. 12*	Exceptions to Octet Rule, Covalent Bond Strength, Molecular Shapes, VSEPR, Polarity, Orbital Overlap	Ch. 8, 9	x	Act.	x	9, FCO

SECOND MIDTERM EXAMINATION - Tuesday, November 13, 11:30 AM to 12:48 PM

Nov. 19*	Hybrid Orbitals, Multiple Bonds, Molecular Orbitals, Second Row Diatomic Orbitals	Ch. 9	Act.	W: Act F: x	9, FCO	x
Nov. 26	Energy, Heat, Work, Enthalpy, Calorimetry, Hess's Law	Ch. 5	VI	VI	10	10

FINAL EXAMINATION - Monday, December 3, 1:30 - 3:18 PM

* Mon. Nov 12; Thurs. Nov 22 & Fri. Nov 23 are University holidays. No classes are held. Univ. offices are closed.

** CKIN = Check-in. FCO = Finish, Check-Out. x = no lab/recitation; Act=Activity; MO=Molecular Orbital

Lab Reports for 1, 2, 3, 4 and 5 are due no later than Friday, Nov. 16th. (See reverse for more info about due dates.)

All Lab Reports are due no later than 4:30 PM on Fri., Nov. 30. (See reverse side for info about weekly due dates.)

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.

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

STUDENT RESPONSIBILITY: Each student receives this information about Chemistry 121 in the first lecture section. It is your responsibility to read this material and be familiar with course content, course 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. The distribution of points is as follows:

Quizzes	150 pts.	
Laboratory	200	▶ A minimum of 50% of the total lab points is required to pass the course.
Midquarter I	175	
Midquarter 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.

MIDQUARTER 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. Students with University conflicts should consult the lecturer as soon as possible and no later than a week before the scheduled exam. Computer answer sheets from exams will not be returned. 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. Bring your **approved calculator** to **ALL** exams

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 is necessary for a passing grade for 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 -if they are misplaced, goggles may be borrowed from 231/331 CE. 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 wear shoes (not sandals) and adequate clothing to reduce the possibility of injury from chemicals or broken glass.
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: Doing home work is strongly encouraged, but will not be collected or graded. The more problems you work, the better prepared you will be for quizzes and exams. Homework solutions will be provided.

OFFICE HOURS: I will be available in my office, 0044B MP, Tuesday and Thursday 1:00 - 2:00pm, No appointment is necessary during those times.

ADDITIONAL ASSISTANCE

1. Lab Supervisor - Dr. Tatz (rjtatz@chemistry.ohio-state.edu, 292-8096, office hours by appointment) 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>
6. The text companion website is <http://www.prenhall.com/brown>

LEARNING RESOURCE CENTER (TA Aid Room) - 160 CE

The Center is open Monday through Friday during posted hours. Computers have instructional programs for the General Chemistry classes that 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 exams.

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 121</i>	<i>Time</i>
CKIN	Safety in the Laboratory	06:08
1	1st - Use of the Balance includes Use of the Pipet and Buret (from "Volumetric Analysis")	10:41
2	Separation of Components of a Mixture	---
3	Stoichiometry and the Chemical Equation	14:06
4	Gravimetric Determination of Sulfate	---
5	Determination of the Formula of a Compound	09:50
6	Reactions of Metal Ions	12:36
7	Volumetric Analysis	11:26
8	Oxidation-Reduction Reactions of the Halogens	---
9	Use of the Spectroscope	05:01
10	Molecular Geometry and Bonding	---

Chem 121 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. Individuals retaking the course must redo all work for the course and may not submit any parts of earlier experiments for grading.

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.

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, except for Experiment 2 which can be torn out of the lab manual.* **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>
1	Measurements of Mass and Volume: Density	Page 3 / 1 a, b submit at end of 1 st lab period	100
2	Separation of the Components of a Mixture	Page 13-14 / 1, 2 b, d, 3	110
3	Development of an Equation	Page 23-25 / 1, 2, 4, 6, 7	110
4	Gravimetric Determination of Sulfate; Semimicro Scale	Page 37 / 3, 4 Computer pre-lab**	110
5	Determining an Empirical Formula	Page 45-46 / 2, 3, 6, 8	110
6	Reactions and Qualitative Determination of Selected Metal Ions	Page 56 / 1 c, d, e, 2 a, 3 b	110
7	An Acid-Base Titration: Determining Molecular Weight	Page 67 / 1 c, 3, 5 a, b, 6 Computer pre-lab**	110
8***	Oxidation-Reduction Reactions of the Halogens	Page 79 / 1 a, b, f, h, 2 a, b, 3 a, 4 a	110
9	Emission Spectra	Page 92 / 1, 3, 4	80
10	Molecular Geometry and Bonding	Page 111 / 1, 2	110

* The laboratory points are factored by 200/950 (Monday labs) OR 200/1060 to give 200 course points.

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

*** Monday labs will not be able to do experiment 8 due to holidays. No prelab is due.

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

<i>Before lab:</i>	Experiment number and title Purpose (one or two sentences) Procedure (reference to pages in lab manual and brief outline)
<i>During lab:</i>	All numerical data (must include label and units) --- <i>Recorded in Notebook first</i> Other observations --- <i>Recorded in Notebook first, Not the lab manual</i>
<i>At home:</i>	Calculations 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 copy will be collected each lab period.

Reports

Cover page containing experiment number and title, student's name, date, T.A. name
Purpose; Procedure reference is sufficient (note any changes)
Report sheet torn out of lab manual (*Photocopies are not acceptable.*)
Sample calculations
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 will be a cut-off date for the first five reports and a cut-off date for all reports.