

CHEMISTRY 1210 Lecture – Autumn 2016

Lecture: MWF 8:00-8:55 am – 1000 McPherson Lab (MP) (5 credit hours)

Instructor:	Dr. Steve Kroner	Lab Supervisor:	Dr. Katherine Moga
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Office:	2060 McPherson	Office:	2139 Newman & Wolfrom
Office Hours:	M, F: 9:15-10:45 am; W: 10:30-12:00 pm	Office Hours:	See Carmen
Textbook:	<u>Chemistry, The Central Science (13th Ed)</u> , Brown, LeMay, Bursten, Murphy, Woodward, & Stoltzfus		
Online Homework:	Sapling Learning – see Carmen for registration instructions		
Calculator:	<u>TI-30XIIs or TI-30Xa</u> No other calculators are permitted for use on quizzes or exams. See http://undergrad-ed.chemistry.ohio-state.edu/calculators		

Prerequisites: Chemistry 1210 requires a prerequisite of one unit of high school chemistry and eligibility to enroll in Math 1150 (150). Not open to students with credit for CHEM 1220 (123), 1620 (162), 1920H (202H), or 1250 (125).

Goals and Learning Outcomes: Chemistry 1210 is a physical science course in the natural science category of the GE, which has the following goals and learning outcomes:

1. Students understand the basic facts, principles, theories, and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries, and understand the potential of science and technology to address problems of the contemporary world.

Disability Services (SLDS): Students with disabilities that have been certified by Student Life Disability Services will be appropriately accommodated and should inform the instructor as soon as possible of their needs. Disability Services is located in 092L Baker Hall 113 W. 12th Avenue; Telephone 292-3307 | TDD 292-0901 | slds.osu.edu

Commitment to Diversity: The Department of Chemistry and Biochemistry promotes a welcoming and inclusive environment for all students and staff, regardless of race, gender, ethnicity, national origin, disability or sexual orientation. There is no tolerance for hateful speech or actions. All violations of this policy should be reported to the OSU Bias Assessment and Response Team (BART, studentaffairs.osu.edu/bias). The Department encourages diversity at all levels, particularly among the next generation of scientists. Students are encouraged to participate in organizations that provide support specifically for science and engineering students who are African-American, Asian, disabled, Hispanic, LGBTQ or women. These organizations are listed on the Colleges of Arts and Sciences (artsandsciences.osu.edu/stem-organizations) and Engineering (engineering.osu.edu/studentorgs) websites.

Requirements in this syllabus (assignments, due dates, policies etc.) may be altered ONLY by the Lecturer of the course.

IF YOU ARE UNABLE TO ATTEND THE FIRST LAB SESSION
Email genchem@osu.edu immediately to reserve your seat!



Student Responsibility: Each student receives the syllabus on Carmen. 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 and on Carmen. If you are absent, you are expected to get notes, announcements, etc. from another student in the class. Review your separate laboratory syllabus for the laboratory schedule, due dates, policies, and assignments.

Carmen (Canvas) | carmen.osu.edu: Carmen is the Learning Management System (LMS) used in General Chemistry at Ohio State. It utilizes a new LMS tool called Canvas. Log in to Carmen on your device to access your course materials, complete assignments, turn in lab reports, view your grades, and track your progress throughout the semester. A Canvas app is also free to download for both [Android](#) and [iOS](#), making it easy to log in to your course from anywhere.

Grading: Your performance in the course will be evaluated based on the components below. Any concerns about your grades or performance should be addressed with your instructor promptly. Individual assignments within the Recitation, Online Homework, and Laboratory categories will be scaled to contribute toward the established percentage of your total course grade:

Assignment	%	Notes
Academic Misconduct Quiz	--	◀ Located on Carmen; required
Recitation Activities	5%	◀ See "Recitation" section
Online Homework	7.5%	◀ See "Online Homework" on Carmen
Midterm 1	7.5%	Friday, September 16 th in lecture
Midterm 2	10%	Friday, October 7 th in lecture
Midterm 3	12.5%	Friday, October 28 th in lecture
Midterm 4	12.5%	Friday, November 18 th in lecture
Final	25%	Monday, December 12 th 8:00-9:45am
Laboratory	20%	◀ See Laboratory Syllabus

Academic Misconduct (COAM) Quiz: The mandatory Academic Misconduct Quiz on Carmen needs to be completed **by Friday, September 2nd**. Unless you receive 100% on this quiz, ***you will not receive a passing grade in this course*** (instead, an E will be submitted as your final grade).

Online Homework: There will be online homework assignments due throughout the semester. Instructions on how to register your account can be found in the "Online Homework" assignment on Carmen, and due dates for the online assignments can be found within Sapling. The graded online homework points will make up 7.5% of your final grade. These points will not be uploaded to the Carmen gradebook until the last week of the semester.

Exams: Exams are a scheduled part of this course and attendance is required. BuckID cards will be collected at all exams. Midterm exams are given only at the times shown in the table above. Your midterm exam booklets will be returned to you as a study aide. Make-up midterm exams will be given for documented medical reasons or a pre-approved university conflict only. Students with these conflicts should contact the lecturer immediately to arrange a make-up exam. The final exam must be taken at the time scheduled by the University Registrar and will not be returned. Sixty days after exam grades are posted, your grade in Carmen is considered final and all other records are destroyed.

Course Schedule: CHEM 1210 consists of lecture sessions (three 55-minute session per week), one recitation, and one lab per week. You are expected to regularly attend all components, as each are integral to the course. Please note: your class schedule in your Student Center on Buckeyelink will have two lab times listed per week; the 55-minute "lab" is your recitation.



Lecture: Lecture will be held each day that class is in session according to the University Academic Calendar. This course will cover the topics below in order/according to the schedule below:

Lecture Topics

Chapter 1	Introduction: Matter and Measurement: The study of chemistry; classifications of matter; properties of matter; units of measurement; uncertainty in measurement; dimensional analysis
Chapter 2	Atoms, Molecules, and Ions: Atomic theory of matter; discovery of atomic structure; modern view of atomic structure; atomic weights; periodic table; molecules & molecular substances; ions & ionic compounds; naming compounds
Chapter 3	Chemical Reactions and Stoichiometry: Chemical equations; simple patterns of chemical reactivity; formula weights; Avogadro's number & the Mole; empirical formulas from analyses; quantitative information from balanced equations; limiting reactants
Chapter 4	Reactions in Aqueous Solutions: General properties of aqueous solutions; precipitation reactions; acids, bases & neutralization reactions; oxidation-reduction reactions; concentrations of solutions; solution stoichiometry & chemical analysis
Chapter 5	Thermochemistry: Energy; the first law of thermodynamics; enthalpy; enthalpies of reaction; calorimetry; Hess's Law; enthalpies of formation; foods & fuels
Chapter 6	Electronic Structure of Atoms: Wave nature of light; quantized energy & photons; line spectra & the Bohr model; wave behavior of matter; quantum mechanics & atomic orbitals; representations of orbitals; many-electron atoms; electron configuration; electron configuration & the periodic table
Chapter 7	Periodic Properties of the Elements: Development of the periodic table; effective nuclear charge; size of atoms & ions; ionization energies; electron affinity; metals, nonmetals & metalloids; trends for group 1A & 2A metals; trends for selected nonmetals
Chapter 8	Basic Concepts of Chemical Bonding: Lewis symbols & the octet rule; ionic bonding; covalent bonding; bond polarity & electronegativity; drawing Lewis structures; resonance structures; exceptions to the octet rule; strength & length of covalent bonds
Chapter 9	Molecular Geometry and Bonding Theories: Molecular shapes; VSEPR model; molecular shape & molecular polarity; covalent bonding & orbital overlap; hybrid orbitals; multiple bonds; molecular orbitals; period 2 diatomic molecules
Chapter 10	Gases: Characteristics of gases; pressure; the gas laws; the ideal-gas equation; gas mixtures & partial pressures; kinetic-molecular theory of gases; molecular effusion & diffusion; real gases: deviation from ideal behavior
Chapter 11	Liquids and Intermolecular Forces: A molecular comparison of gases, liquids & solids; intermolecular forces; select properties of liquids; phase changes; vapor pressure; phase diagrams; liquid crystals
Chapter 12	Solids and Modern Materials: Classification of solids; structure of solids; metallic solids; metallic bonding; ionic solids; molecular solids; covalent-network solids; polymers; nanomaterials



Recitation: Recitations are 55 minute sessions held according to the schedule below. Recitations stress active learning in a supervised environment. Activities are provided in recitation that cover central concepts of the course, and regular participation in recitation will contribute to your understanding of the material. A total of 13 activities will be given during recitation according to the schedule below. Your lowest 3 activity score(s) will be dropped. You must attend recitation to receive these points; no makeup assignments will be provided for absences (a score of zero resulting from an absence would be your drop). Points earned in recitation will be scaled to contribute a maximum of 5% to your total course grade.

CHEM 1210 Recitation Schedule					
Week of	Monday	Tuesday	Wednesday	Thursday	Friday
Aug 22-26	No Classes*	Activity 1		Activity 1	
Aug 29-Sept 2		Activity 2		Activity 2	
Sept 5-9	Labor Day†	Activity 3		Activity 3	
Sept 12-16		Activity 4		Activity 4	
Sept 19-23 Midterm 1		Activity 5		Activity 5	
Sept 26-30		Activity 6		Activity 6	
Oct 3-7		Activity 7		Activity 7	
Oct 10-14		X		Autumn Break‡	
Oct 17-21 Midterm 2		Activity 8		Activity 8	
Oct 24-28		Activity 9		Activity 9	
Oct 31-Nov 4		Activity 10		Activity 10	
Nov 7-11 Midterm 3		Activity 11		Activity 11	Veteran's Day§
Nov 14-18		Activity 12		Activity 12	
Nov 21-25		X	Thanksgiving Break		
Nov 28-Dec 2		Activity 13		Activity 13	
Dec 5-Dec 9		X		Reading Day¶	Finals Week

* First day of class is Tuesday, August 23rd

† No class Monday, September 5th due to Labor Day

‡ No class October 13th – 14th due to Autumn Break

§ No class Friday, November 11th due to Veterans Day

|| No class November 23rd – 25th due to Thanksgiving Break

¶ Last day of class is Wednesday, December 7th

X No scheduled recitation



Laboratory: Consists of a two hour and 55 minute session each week. The lab portion of this course will be scaled to be worth 20% of your total course grade, and **you must receive a minimum of 50% of the total lab points to pass the course**. Consult the laboratory syllabus for full details about the laboratory. The following items are of particular importance:

- Lab reports will be submitted digitally on Carmen. Late assignments are accepted up to one week with point deductions. No lab reports are accepted after Monday, December 5th at 5:00 PM. See your lab syllabus for details.
- If you miss the FIRST lab, notify the general chemistry office (genchem@osu.edu) immediately to claim your seat in the course, as unclaimed lab seats can be given away to waitlisted students. Follow the office's instructions for watching the lab safety video, and you will receive a form to turn into your lab TA at your next lab.

Learning Resource Center: The Learning Resource Center (LRC) is located in 170 Celeste Lab. It is a place where students can come for individual help and instruction in General Chemistry. You are strongly encouraged to make use of the LRC frequently. Computers that have instructional programs for 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.

Your teaching assistants (TAs) spend some time each week in the LRC to answer specific questions about their course as well as general questions in any 1000-level Chemistry course. A schedule is posted in the LRC and on Carmen which lists the time each TA is available, as well as the course they teach. Stop by when convenient during posted hours; you do not need to make an appointment. The LRC has limited space and is not designed to be a library or study hall.

Notes on Final Grade Assignment: To ensure consistent grading among parallel sections of the same course, as well as from one semester to the next, grades in all 1000-level chemistry courses are assigned by your instructor in consultation with the Vice Chair for Undergraduate Studies. The following guidelines may help you better understand the procedure that will be used to determine your final grade:

- Rather than using pre-determined grade cuts, each semester, course total scores are arranged in descending order and cuts are determined based on the overall performance.
- No adjustment is made to the scores earned on individual course components (*i.e.* exams, activities, homework assignments, or labs) or to the total score achieved in the course.
- The average (mean) total score of all students who finish the course is usually in the C grade range. This means that if you finish with a total score near the class average your grade will very likely be C+, C, or C-. However, the grade for an average score could fall outside of this range if performance dictates.
- All components of the course factor into the total score. In this course, homework, recitation, and lab averages are often in the 80-90% range, while exam averages are often in the 55-75% range. Overall, classes tend to average about 65-75%.
 - To help you consider what your letter grade is on an individual assignment, a grade in the C range is most indicative of an average score. So if a lab report score averages about 85%, then earning 85% on a lab report would be best considered a C. Similarly, earning an exam score of 65% if the average is 65% would best be considered a C.
 - Every student will take exams in this class. Those with better knowledge and understanding tend to do better than average. The instructor will typically give information about interpreting your exam score after each exam in lecture, on Carmen, and/or by email.
 - If you receive more than 90% in the course, your final grade will not be lower than A-.
 - If you receive less than 50% in the course, it is likely that you will fail the course (*i.e.*, receive a grade of E).
- The prerequisite for the next chemistry course is passing this course with at least a final grade of D. Some majors or programs may require a better grade for this course to count. Check with your major, program, and/or advisor to see what grade you must receive to satisfy all necessary requirements for your degree. However, past data shows that students who have achieved a D in 1210 do poorly in 1220 due to inadequate preparation. You should reconsider trying to continue without a minimum of a C- in 1210.



STANDARDS OF ACADEMIC CONDUCT IN GENERAL CHEMISTRY

Violations of academic standards in General Chemistry will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules. It is the responsibility of COAM to investigate all reported cases of student academic misconduct; illustrated by, but not limited to, cases of plagiarism and any dishonest practices in connection with examinations, quizzes, and graded assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information see the Code of Student Conduct: http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf

Student Responsibilities: *Any graded material submitted in General Chemistry must represent your own work.* This includes exams, quizzes, homework, and laboratory assignments, which are to be an individual effort. Unauthorized group efforts by students, use of another student's course materials, or assistance from individuals who already have taken the course, could place you in jeopardy of violation of the standards for General Chemistry. In some courses, group work is acceptable on certain activities (as explicitly stated by your instructor). In these cases, it is important that you know and understand where authorized collaboration (working in a group) ends and collusion (working together in an unauthorized manner) begins. Identical answers indicate copying or unacceptable group efforts - always answer questions in your own unique words. It is important that you consult with your instructor for clarification on whether or not collaboration is appropriate on an activity.

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

Exams & Quizzes: Examinations are a crucial part of General Chemistry courses, and the integrity of these assessments is taken very seriously. During exams and quizzes, staff will monitor for violations of academic integrity. Video recordings or photos may be taken by department staff during exams or quizzes. Any violation, or appearance of a violation, on exams and quizzes will be immediately reported to COAM with a recommended **minimum** penalty a failing grade for the course. Below is a non-exhaustive list of examples of Academic Misconduct on exams and quizzes:

- Viewing or copying others' answers, use of crib material (e.g. a "cheat sheet"), or use of stored constants and formulas in calculators on quizzes, activities, midterm examinations, or the final exam. This kind of behavior is regarded as a severe violation of academic standards, no matter how small the action.
- The use of any calculators other than those approved on the course syllabus constitutes academic misconduct. The staff will inspect calculators used on exams and quizzes; unauthorized calculators will be confiscated.
- During exams, students are seated with their lab section to facilitate proctoring of the exam. Desks and aisle ways should be cleared of all unauthorized materials, including cell phones or other internet-enabled devices, which should be completely silenced and placed out of sight.
- Students should take care to preventatively avoid appearances of academic misconduct during testing. Best practices for avoiding the appearance of academic misconduct include focusing on one's own exam, making efforts to conceal one's own answer sheet and written work on exam pages both during and after the exam, not allowing one's own eyes to "wander the room," avoiding writing answers in the margins to be seen by other students, clearly ceasing working when time is called, and not speaking with other students at any point during the exam, including when in line to turn in the exam. It is the students' responsibility to inform the instructor ahead of time of any medical conditions that may result in the exhibition of these behaviors, so that appropriate arrangements can be made.
- Unauthorized removal of any exam materials from the exam room will be treated as Academic Misconduct.

Laboratory: Laboratory work is the essence of the science of chemistry. All laboratory work in General Chemistry is to be an individual effort. 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. Academic misconduct involving lab work includes but is not limited to the following:

- 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 under the supervision of 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 of these laboratory guidelines will be prosecuted with the minimum recommended penalty of a zero for the entire laboratory component of the course. As stated in the syllabus, a minimum grade in laboratory is required to pass the course, and this penalty can result in an E (failing grade) for the course.
- Plagiarism or the submission of work based on old material is considered to be academic misconduct no matter how small the infraction. Possession of another student's lab report(s) will raise immediate concerns about academic misconduct.
- Evidence of copying or unauthorized "working together" on laboratory course work will be submitted to COAM. The minimum penalty recommended by the Department of Chemistry and Biochemistry will be a zero for the pre-laboratory exercise and the accompanying experiment.
- Individuals retaking the course must complete all work for the course during the current semester and may not submit any parts of pre-labs or lab work or reports performed in a previous semester (see item #6 in "Ten Suggestions for Preserving Academic Integrity", <http://oaa.osu.edu/coamtensuggestions.html>).