Georgia State University – Perimeter College
Syllabus and Course Policies
Chemistry 1211 – Fall 2016
Date: 19 August 2016

Course: Chem 1211 – 057 (#91163) Principles of Chemistry I
Professor: Maureen Burkart, Ph.D. Office: NE-2222, 770-274-5053
e-mail: mburkart@gsu.edu
Physical Science Department Office: NE-2614, 770-274-5105
*Note – The instructor checks GSU email at least once a day, Mon – Thurs.
She may not check email over a weekend. She checks voice-mail less often,
~ once a week. The instructor does NOT check icollege email.
Classroom: NE-1260
Lecture Time: TR 1:00pm – 2:15pm
Tutoring/Advising: Mon 11:45am – 12:45pm; 5:15pm – 6:45pm; Tues 2:15pm – 3:45pm; 5:15pm –
6:15pm; Wed 11:45am – 12:45pm; 5:15pm – 6:45pm; Thurs 2:15pm – 3:45pm;
5:15pm – 6:15pm.
Website: http://sites.pc.gsu.edu/mburkart/

Description: This is the first course in a two-semester sequence covering the fundamental principles and
applications of chemistry for science majors. Topics include composition of matter, chemical reactions,
stoichiometry, periodic relations, nomenclature, thermochemistry, electronic structure, chemical bonding,
molecular geometry, and properties of gases.

Calendar:
Aug 22 Classes begin
Sep 05 Holiday – Labor Day
Oct 11 Midpoint, last day for student-initiated withdrawal
Nov 21 – 26 Holiday – Thanksgiving
Dec 05 Last day of classes
Dec 06 Final exam – Tuesday, 1:00pm

Prerequisite: Exit or exemption from ENGL 0999 and all ESL requirements except ENSL 0091 are
requirements for this course.
Suggested Prerequisite: Math 1112 or Math 1113

Corequisite: Chem 1211L

Required Text & Materials: The required text is Chemistry, authors Zumdahl & Zumdahl, 9th edition –
Brooks/Cole Cengage Learning. A scientific non-programmable calculator is required. An example of
an acceptable calculator is the Texas Instruments TI-30XA. The OWL v2 program (Online Web Learning
version 2) is required to complete the online homework assignments. Scantron forms are also required;
they will be used as answer forms for exams.

Attendance Policy: Students are expected to attend all class meetings. There will be no excused absences.
In the event of absence, it is the responsibility of the student to obtain assignments and information
covered during the absence. An attendance sheet will be circulated at the beginning of class. Anyone who
does not sign the attendance sheet will be counted absent. Signing the attendance sheet for someone else is
falsifying the official record and is grounds for dismissal from the class. The GSU Attendance Policy may
be found using the following link: http://codeofconduct.gsu.edu/files/2013/03/2013-14-Student-Code-
IV.F.-Policy-on-Class-Attendance.pdf.

*Note: The course syllabus provides a general plan for the course; deviations may be necessary.
Course Grade: The course grade will be determined from student work as follows.

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Exams</td>
<td>66%</td>
<td>Periodic exams, each covering 2 – 3 chapters from the text</td>
</tr>
<tr>
<td>OWLv2 Homework</td>
<td>9%</td>
<td>Online homework assignments</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
<td>Comprehensive departmental exam(s)</td>
</tr>
</tbody>
</table>

Exams: There will be four class exams and a final exam. The final exam is mandatory.

***************THERE ARE NO MAKE-UP EXAMS***************

The final course average is obtained by averaging the three highest class exam scores to determine 66% of the course grade. If one of the class exams is missed, that exam becomes the dropped exam. The intent of this grading scheme is to accommodate instances of sickness, accident, or other emergency circumstance for which a student might miss a scheduled exam. If a second exam is missed, that exam grade will be recorded as zero. It is the student’s responsibility to be on time for the administration of exams. No extra time will be given to those who show up late for the exam. The grading scale is the standard scale with the following cutoffs:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 - 90</td>
</tr>
<tr>
<td>B</td>
<td>89 - 80</td>
</tr>
<tr>
<td>C</td>
<td>79 - 70</td>
</tr>
<tr>
<td>D</td>
<td>69 - 60</td>
</tr>
<tr>
<td>F</td>
<td>below 60</td>
</tr>
</tbody>
</table>

The final exam includes a standardized ACS exam that covers the entire course.

Note: Dr. Burkart does not reveal grades via email or phone due to privacy issues.

The only electronic device allowed during exams is a scientific non-programmable calculator.

Students are not allowed to use the following devices during exams:
- Computers
- Cell phones
- Computerized dictionaries
- Molecular models
- Ipods
- Ipads
- Palm pilots
- Programmable calculators

OWLv2 Homework: There will be ~ ten OWLv2 homework assignments during the term. Each assignment has a specific due date that is related to the class exam date for that material.

***************THERE ARE NO LATE SUBMISSIONS FOR OWLv2***************

The final course average is obtained by averaging all of the OWLv2 homework scores to determine 9% of the course grade. None of the OWLv2 homework scores will be dropped; all count toward the course grade.

Withdrawal Policy: Voluntary withdrawals by the student are allowed through midpoint, October 11. Note that, depending on the total number of withdrawals on the student’s record, this may result in a W or a WF on the student’s record. Students are allowed to withdraw with a grade of W a maximum of three times in their undergraduate associate level careers at Georgia State; after receiving three W grades, the student will be assigned WF for any withdrawal. Students are responsible for formally dropping or withdrawing from courses using the online registration system, PAWS at paws.gsu.edu. The instructor will not withdraw students from the class. Withdrawal from Chem 1211 lecture automatically requires withdrawal from Chem 1211 laboratory, and likewise a withdrawal from lab will result in withdrawal from lecture. The GSU Withdrawal Policy may be found using the following link: http://advisement.gsu.edu/self-service/policies/withdrawal-policy/.

***Your constructive assessment of this course plays an indispensable role in shaping education at Georgia State. Upon completing the course, please take the time to fill out the online course evaluation.***
**Academic Honesty Policy:** Cheating includes any attempt to defraud, deceive or mislead the instructor in arriving at an honest grade assessment. Plagiarism is a form of cheating that involves presenting as one's own the ideas or work of another. All portions of any test, project (lab report, homework assignment, etc.), or final exam submitted by you for a grade must be your own work unless you are instructed to work collaboratively. Specific requirements will be described for collaborative projects, but all work presented must be the work of members of that group. Research materials used must be properly cited.

Violation of the Academic Honesty Policy will result in a grade of zero for that test, project or exam. The second offense will result in assignment of a grade of "F" for the course, and a formal charge of Academic Dishonesty will be lodged with the College Dean.

The GSU Academic Honesty Policy may be found using the following link: [http://codeofconduct.gsu.edu/files/2016/07/Academic-Honesty.pdf](http://codeofconduct.gsu.edu/files/2016/07/Academic-Honesty.pdf).

**Americans with Disabilities Act Policy:** Students who wish to request accommodation for a disability may do so by registering with the Office of Disability Services. Students may only be accommodated upon issuance by the Office of Disability Services of a signed Accommodation Plan and are responsible for providing a copy of that plan to instructors of all classes in which accommodations are sought.

**Equal Opportunity and Affirmative Action Policy:** It continues to be the policy of Georgia State University to implement affirmative action and equal opportunity for all employees, students and applicants for employment or admission without regard to race, color, religion, national origin, sex, age, sexual orientation, veteran status or disability. Information on the GSU Equal Opportunity and Affirmative Action Policy may be found using the following link: [http://odaa.gsu.edu/equal-opportunity-and-affirmative-action-policy/](http://odaa.gsu.edu/equal-opportunity-and-affirmative-action-policy/).

**Incomplete:** The grade of “I” (Incomplete) may be given to a student who for nonacademic reasons beyond his or her control is unable to meet the full requirements of a course. In order to qualify for an “I,” a student must:

a) have completed most of the major assignments of the course (generally all but one) and
b) be passing the course (aside from the assignments not completed) in the judgment of the instructor.

When a student has a nonacademic reason for not completing one or more of the assignments for a course (including examinations) and wishes to receive an “I” for the course, it is the student’s responsibility to inform the instructor in person or in writing of the reason.

**Veterans and Serving Military:** At Georgia State University, we respect the commitment our service men and women make to our country and we work to make our military and veteran students feel comfortable as they earn their college degrees.

The Military Outreach Center on each campus assists eligible veterans, active duty military, Reservists & National Guard members, and dependents with the support and services they need to reach their academic goals. There is a Military Outreach Center on every campus with a staff of advocates, all of whom are military veterans or dependents prepared to Serve Those Who Have Served.

Information on the GSU Military Outreach Centers may be found using the following link: [http://veterans.gsu.edu/military-outreach-centers/](http://veterans.gsu.edu/military-outreach-centers/).
Inclement Weather Policy: In the event that inclement weather strikes the Atlanta metro area, students are expected to tune into WSB radio (750 am) or WSB television (Channel 2) to determine if GSU-PC has closed or not. If the school is open, class will meet as regularly scheduled. If the school is closed, students will not be allowed on campus. If an exam is scheduled on a day that the college is closed, students should come to the next class meeting prepared to take the exam that was scheduled for the cancelled day.

Email Communication: Students must use GSU email for email communication with Dr. Burkart. Specifically, if students wish to contact Dr. Burkart via email, they must send the email to Dr. Burkart (at mburkart@gsu.edu) using their GSU email account (zzz@student.gsu.edu). Any email sent from a domain other than gsu.edu may go into “Junk Email”; such email will not be visible and thus will not receive a reply. Note also that Dr. Burkart does not check icollege email and therefore does not use icollege email except for special circumstances.

Tobacco and Smoke-Free Campus Policy: Smoking and tobacco use of any kind are prohibited on all GSU owned and/or leased locations/premises, on all internal and external areas, parking garages, and parking lots, in all GSU owned and/or leased vehicles. Smoking is also prohibited within 25-feet of all GSU building entrances and exits.

Perimeter College seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment/misconduct/assault, we encourage you to report this. If you report this to a faculty member, he or she must notify one of our college’s Assistant Title IX Coordinators / Student Deans about the basic facts of the incident (you may choose whether you or anyone involved is identified by name). For more information please refer to our Title IX website – http://deanofstudents.gsu.edu/title-ix/

Classroom Conduct: Students are expected to act with respect for the professor and other members of the class. In order to maintain a beneficial learning environment, Rude and/or Disruptive behavior will NOT be tolerated. Any student whose conduct is deemed inappropriate will be asked to leave the class. The following are considered rude and disruptive:

- Conducting private conversations in the class during lecture/discussion.
- Not paying attention during lecture/discussion.
- Consistently arriving late for class. {In the event of a late arrival, enter and take a seat quietly.}
- Leaving class early. {This should occur only in an emergency}
- Walking in-and-out of the classroom while class is in session.
- Ringing beepers and cellular phones. {These should be turned off while in class.}

Note: Food and drink are not allowed in the classroom. (Water may be an exception. Speak to the instructor if there are extenuating circumstances.)
Classroom Conduct Code*

BE CONSIDERATE OF YOURSELF

- Attend all classes, be on time, ready to work, and do not leave early.
- Do 100% of your assigned work, and meet all deadlines.
- To learn effectively you must expect to work two to three hours outside class for every hour spent in class.
- Do not cheat or plagiarize since you ultimately rob no one but yourself. (What, say, would be the point of cheating on piano lessons?)

- Conversely, when you openly display boredom, irritation, or animosity, you are taken very seriously by the professor who is attempting to teach while observing your behavior.
- Wait to discuss your personal progress with your teachers until after class. (At the beginning of a class session teachers usually are concentrating on preparations for class.)
- Try to distinguish between comments which are appropriate in the classroom and those which would be more appropriate during office hours. (If you are not sure, ask your teachers privately.)
- Don’t ask teachers such questions as “Did I miss anything last week?” or “Are we doing anything important today?” Assume that every detail of every class session is essential.
- Feel free to ask for clarification of what will be on a test, but consider everything -- every word of every lecture, discussion, or reading -- essential to the class and fair game for tests.

BE CONSIDERATE OF OTHER PEOPLE

- Do not talk or make noise while any other person is speaking, reading, or writing. Learning depends upon full concentration at all times, and no one appreciates disruptions.
- Set beepers to “vibrate,” and turn off phone ringers.
- Consider the feelings of others, and do not make negative, offensive, or aggressive remarks.
- Your opposing and unconventional ideas are always welcome, so do not attack others simply because you do not agree with them. Instead, try to welcome diversity of opinion.
- Your teachers are not televisions. They are humans who personally interact with you -- even while they are lecturing. Your engagement with the subject matter being discussed is appreciated immensely.

BE CONSIDERATE OF PROPERTY

- Keep the classroom, library, computer center, and campus clean and free of litter.
- Leave the classroom as orderly as -- or more orderly than -- you found it.
- Do not misuse (infect, modify, or destroy) computer software, data, equipment, or networks.

*Taken from the GPC Student Handbook and Dr. Debi Moon.

Student’s Responsibility: Students must develop a fundamental understanding of chemical concepts as well as skill in solving problems, and the best way to do this is to rewrite class notes and work through the homework. **To be successful, expect 10 to 20 hours per week outside of class to study and do homework.** Concepts in chemistry build on one another, so it is important not to fall behind. Note that the student is responsible for information in the book that may not necessarily be covered in the lecture.

The laboratory grade is separate and requires additional time. Expect 4 to 10 hours at home to prepare for laboratory sessions, calculate results, and prepare lab assignments.

Since chemistry is a course that is best learned with the student’s active participation, the instructor encourages students to ask questions in class when the need arises. However, the instructor is under certain time constraints and may need to hold off answering a question until after the class or at a mutually arranged time.
Chemistry 1211 Tentative schedule - subject to change

**Homework**: Read each chapter. Rewrite your class notes. Do all in-chapter questions and problems, and then complete the online homework assignments (OWLv2). Next, answer the blue colored end-of-chapter “Exercises.” The more practice you get, the easier it will be for you! *(Note: The only homework assignments that will be graded are the online OWLv2 homework assignments. However, students should work the end-of-chapter homework problems in order to prepare for exams.)*

Chapter outlines and supplemental handouts are available on the web: [http://sites.pc.gsu.edu/mburkart/](http://sites.pc.gsu.edu/mburkart/). Students are expected to access Dr. Burkart’s webpage and print copies of these materials before coming to class. Most of the documents are PDF format (requiring Adobe Acrobat). If students cannot access the files at home, they may use computers in room NE-0160.

Unit 1: Chapter 1 Chemical Foundations

Chapter 2 Atoms, Molecules, and Ions

Chapter 3 Stoichiometry

**Exam 1**: Unit 1 Tuesday, 13 September

Unit 2: Chapter 4 Types of Chemical Reactions and Solution Stoichiometry

Chapter 5 Gases

**Exam 2**: Unit 2 Thursday, 06 October

Unit 3: Chapter 6 Thermochemistry

Chapter 7 Atomic Structure and Periodicity

**Exam 3**: Unit 3 Tuesday, 01 November

Unit 4: Chapter 8 Bonding: General Concepts

Chapter 9 Covalent Bonding: Orbitals

**Exam 4**: Unit 4 Thursday, 01 December

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**Final Exam - Comprehensive – Tuesday, 06 December at 1:00pm**

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Website: [http://sites.pc.gsu.edu/mburkart/](http://sites.pc.gsu.edu/mburkart/)

*Note: The course syllabus provides a general plan for the course; deviations may be necessary.*
Expected Educational Results

Matter and Measurement – at the completion of the lecture course, students should be able to:
• Classify different types of materials, properties of matter, and transformations of substances
• Do conversions using SI units and other unit systems with proper use of significant figures

Atoms, Molecules and Ions – at the completion of the lecture course, students should be able to:
• Define the charges of the subatomic particles, define mass number, natural abundance, isotope, and average atomic mass
• Distinguish between metals, nonmetals, and metalloids, and between ionic and molecular compounds
• State the name, or write the chemical formula for ionic compounds, binary covalent compounds, and the common acids

Calculations with Chemical Formulas and Equations – at the completion of the lecture course, students should be able to:
• Balance a chemical equation and use it to perform stoichiometric calculations involving masses, solution concentrations, or gas pressures, while identifying the limiting reagent, calculating theoretical yield and percent yield
• Use the mole concept and Avogadro’s number to determine the number of atoms in a given sample
• Calculate the molar mass of a given substance and use it to convert between mass and mole amounts
• Calculate empirical or molecular formulas from given experimental data.

Aqueous Reactions – at the completion of the lecture course, students should be able to:
• Distinguish between strong, weak and nonelectrolytes; between strong and weak acids and bases; and between precipitation, acid-base, and redox reactions
• Apply the solubility rules to predict the product of a precipitation reaction
• Write and balance a net ionic equation for a precipitation, acid-base, and redox reaction.
• Determine the concentration of an unknown using titration data
• Define molarity, calculate molarity concentrations of compounds or ions, and do sequential dilution calculations
• State the oxidation number of each atom in a given compound or element
• (Optional) Use the metal activity series to predict the outcome of the reaction between a metal and either a metal ion or an acid

Thermochemistry – at the completion of the lecture course, students should be able to:
• Define and distinguish between internal energy and enthalpy
• Apply the first law of thermodynamics to relate the change in internal energy of a system to the transfer of energy between the system and its surroundings via heat and work.
• (Optional) Calculate the work for an irreversible expansion (or compression).
• Calculate the enthalpy change for a chemical reaction from standard enthalpies of formation, (or atom combination enthalpies) and bond dissociation energies.
• Based on the sign of the enthalpy change, state if a reaction is exothermic or endothermic
• Perform calculations involving calorimetry to determine the change in internal energy (or enthalpy) during a chemical reaction, heat transfer, and temperature change.
• Apply Hess’ law of heat summation to determine the enthalpy of a reaction produced by the combination of other reactions of known enthalpy.

Periodic Properties – at the completion of the lecture course, students should be able to:
• Arrange atoms and ions in order of diameter
• State the periodic trends seen for the first ionization energies
• (Optional) Define electron affinity
• (Optional) State the name of each main group as well as the major chemical properties of each group

Electronic Structure of Atoms – at the completion of the lecture course, students should be able to:
• Define orbital, state the four types of orbitals, and the maximum number of electrons in each
• Write the electron configuration for the ground state of atoms and ions
• use Hund’s rule to draw the orbital diagram of the ground state of an atom or ion
• Perform calculations that convert frequency to wavelength and/or energy
• (Optional) Use the Rydberg equation to calculate the emission lines of the hydrogen atom
• Use the Pauli exclusion principle to state the quantum numbers that describe an electron in a given orbital
Chemical Bonding – at the completion of the lecture course, students should be able to:

- Define electronegativity, and be able to identify and distinguish between an ionic bond and a covalent bond, and a polar covalent bond and a nonpolar covalent bond
- Draw the Lewis dot symbols of the main group atoms, and use them to draw Lewis structures and resonance structures of small molecules and ions, including any formal charges
- State the octet rule and identify exceptions
- (Optional) Arrange ionic compounds in order of increasing lattice energy

Molecule Geometry and Bonding Theories – at the completion of the lecture course, students should be able to:

- State the molecular geometry and bond angles, the polarity, and the hybridization of any non-hydrogen atom if given a Lewis structure
- Define and distinguish between sigma and pi bonds, and
- Identify the HOMO and LUMO given a simple energy level diagram
- (Optional) Predict whether a molecule is paramagnetic or diamagnetic from an MO diagram

Gases – at the completion of the lecture course, students should be able to:

- Use the ideal gas law to calculate an unknown pressure, volume or molar quantity, do stoichiometric calculations, and determine the molar mass or density of an unknown gas
- Use Dalton’s law to calculate the partial pressures of gases in a mixture
- Understand the ideal gas law from the kinetic molecular theory of gases, and how high pressure and low temperature can cause gases to deviate from ideal behavior
- Understand the dependence of molecular speeds of gas molecules on mass, and temperature
- (Optional) Calculate the root-mean-square speed of a molecule at a given temperature
- (Optional) Use Graham’s law to compare the rates of effusion or diffusion of two different gases
- (Optional) Use the Van der Waal’s equation to calculate the pressure of real gas at a given volume and temperature

Removal Policy for Non-attendance:
Any student who does not attend this class at least once during the first two weeks of the academic term (prior to Sept. 6) will be reported as not having attended, which will result in them being removed from the class roll and also from any co-requisite lecture and lab course. Once students who’ve not attended during the first two weeks have been reported for removal, I will not be doing any instructor initiated withdrawals during the remainder of the term. It is each student’s responsibility to attend class regularly and complete all assignments on time. If you do not do so your grade will be penalized as stated elsewhere in this syllabus. It is also each student’s responsibility to complete and submit a withdrawal form before the term midpoint (see GSU academic calendar) if they do not want to receive a final grade in this course. Students who do not withdraw themselves by the term midpoint will receive a final grade in the course calculated with penalties or grades of zeroes for all late or un-submitted work. Perimeter College students are limited to a maximum of 3 course withdrawals (lecture and lab count as one withdrawal since they are co-requisites). Any withdrawals above 3 are recorded as WF on the student transcript.
http://www2.gsu.edu/~wwwfb/sec401.html#401.03
https://catalog.gsu.edu/associate20162017/university-academic-regulations/#dropping-classes-and-voluntary-withdrawal