Course: Chem 1212L – 027 (#91184)  Principles of Chemistry II Lab
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-1130
Lecture Time:  W  1:00pm – 3:45pm
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 course includes laboratory exercises to supplement the lecture material for Chem 1212. It is a practical course in which students use knowledge from Chem 1211L and extend their experience in safe and proper laboratory technique. Graphical analysis, pH titration, equilibrium reactions, and kinetics analysis are included in the course.

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
*30 Nov      Final exam – Wednesday, 1:00pm

Course Requirements: Chem 1211, Chem 1211L, (or Chem 1211K) and Math 1113, each with a C or better, are requirements for this course.

Corequisite: Chem 1212 lecture

Required Materials: The required text is Principles of Chemistry Laboratory Experiments – A Project Oriented Approach, 9th edition 2015-2016, for the Dunwoody campus. Students must also obtain a Hayden McNeil Duplicating Lab Notebook. A scientific, non-programmable calculator should be brought to each meeting. An example of an acceptable calculator is the Texas Instruments TI-30XA.

Attendance Policy: Attendance will be taken at every laboratory session. There will be no makeup sessions for a missed lab. If absent, you will receive zero grades for assignments given for the laboratory session that you missed—NO exceptions. Due dates for reports remain unchanged, unless the absence is due to hardship (documentation required). 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.
**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 1212 lecture automatically requires withdrawal from Chem 1212 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/](http://advisement.gsu.edu/self-service/policies/withdrawal-policy/).

Note: Students with special conditions (such as pregnancy, nursing mothers, allergies, suppression of the immune system through causes such as disease, chemotherapy, transplants, etc.) should be aware that science laboratories contain materials which when handled improperly pose potential hazardous effects. These students should contact their physicians for advice about continuing the laboratory. The materials used in Chem 1212L are listed in the appendix of the lab manual. **The Laboratory Course must be completed before proceeding to the next course in the sequence.**

**Expected Educational Results:** Upon successful completion of this course,

• students will be able to assimilate information to carry out a chemistry laboratory experiment by reading technical text material, listening to verbal instructions, and exchanging ideas with others.
• students will be able to write down experimental observations in detail and in proper form into a notebook, thereby preserving the observations for critical analysis.
• students will be familiar with use of glassware, equipment, and instrumentation common to a general chemistry laboratory.
• students will understand the general principles underlying the experiments so as to apply those principles to similar chemical phenomena outside the scope of the course.
• students will understand what is appropriate behavior in a laboratory setting.

**Departmental Syllabus:**

Students must adhere to the [Georgia Perimeter College Principles of Chemistry Laboratories Common Syllabus, Policies, and Equipment](http://depts.gpc.edu/~dunchelb/) for the Dunwoody Campus. Of particular importance are the following sections: “Chemistry Laboratory Safety” directions, the “General Equipment Usage”, the “Dunwoody Campus Science Department Laboratory Safety Policy”, and the “Departmental and College Policies”. The Dunwoody Campus Departmental Syllabus for Chem 1212L can be found on the Dunwoody Campus Chemistry Lab webpage, [http://depts.gpc.edu/~dunchelb/](http://depts.gpc.edu/~dunchelb/).

**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/).
Safety:

Absolutely no food, drink, gum, tobacco products, or makeup should be consumed or used in the laboratory.

**You must wear eye protection at all times while in the laboratory!!**
Students must purchase safety goggles with the Z87 safety rating to be brought to every lab session. Safety goggles must be worn at all times in the lab, including during clean up. Failure to keep safety goggles over the eyes will result in points deducted from the student’s course grade. *A student who arrives in class without safety goggles will not be allowed in the laboratory and will be assigned zero grades for all assignments associated with that day’s work.*

**You must wear closed shoes that cover the entire foot at all times while in the laboratory!!**
Closed shoes that cover the entire foot must be worn at all times in the lab. *A student who is not wearing closed shoes that cover the entire foot will not be allowed in the laboratory and will be assigned zero grades for all assignments associated with that day’s work.*

**You must wear pants/skirts that extend below the knee at all times while in the laboratory!!**
Pants or skirts that extend below the knee must be worn at all times in the lab. *A student who is not wearing pants or skirts that extend below the knee will not be allowed in the laboratory and will be assigned zero grades for all assignments associated with that day’s work.*

- Students are responsible for all safety information presented in the ACS Safety Video shown during the first lab session.
- The lab is equipped with a safety shower and eye wash. Material Safety Data Sheets are available for each chemical in the lab.
- Exposed midriffs, baggy pants, exposed underwear, and hats are not allowed in the laboratory.
- Students may not enter the stockroom.
- Students are not allowed to sit on the lab benches or on the floor.
- Students are not allowed to sit on chairs while working at the lab bench.
- All books, bags, and coats should be stored under the balance tables during the lab session.
- Students are responsible for maintenance of the equipment and workstation assigned to them. The equipment and workstation must be left clean of chemicals, spills, and paper waste. All materials used during the lab session should be returned to the place where they were found.
- Irresponsible behavior will not be tolerated and will result in expulsion from the laboratory. First offense—warning. Second offense—student is dismissed from the laboratory session and receives a “0” for each assignment associated with that session. Third offense—student is barred from returning to the lab class for the rest of the semester and receives an F grade for the course.
- Specific safety information will be given at the beginning of each laboratory session. You must arrive in class on time so that you have the opportunity to understand the important safety precautions.
- Any student who has a medical condition needs to inform the instructor of it.
- If the instructor becomes incapacitated, students must stop what they are doing, turn off the gas, turn off electrical appliances (e.g. hot plates, hot water baths), close bottles containing corrosive or toxic chemicals, and call 770-274-5511, Campus Protective Services.
General notes

- The instructor will give a short(?!?) explanation of the experiment at the beginning of lab. This explanation will not be repeated during the lab period.

- For a student who arrives late, if the instructor feels that the student cannot safely or completely carry out the experiment, the student will not be allowed to perform the experiment. In this case, the student will receive zero grades for each of the associated assignments. No extra time will be given to those who show up late. To assure that you finish the required work, come to lab prepared.

- It is the responsibility of the student to make certain that his/her station and box are neat and clean. If the station is not cleaned up, points will be taken off of the student’s grade. If two partners work at a particular station, then both are responsible for the area. Common areas must remain clean and neat at all times. If common areas are not left clean, points will be deducted from all students’ grades.

Grade: The course grade will be determined from student work as follows.

Lab assignments 80% Lab assignments include quizzes, analysis sheets, online pre-lab assignments, lab notebook checks, and lab reports.

Final Exam 20% The final exam will be comprehensive.

The grading scale is the standard scale with the following cutoffs:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>100 - 90</td>
</tr>
<tr>
<td>B</td>
<td>89 - 80</td>
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<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>

**********THERE ARE NO DROPPED GRADES in Chem 1212L**********

The final course average is obtained by averaging all of the assignments. None of the notebook, lab assignment, or exam scores will be dropped; all count toward the course grade.

***Note – Late work will not be accepted. Students must time-stamp all assignments turned in at the beginning of class.

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

***Keep in mind that failure to keep safety goggles over the eyes, placing drink bottles on the bench, failure to clean personal or common areas, failure to prepare the pre-lab information in the lab notebook will all result in deduction of points from the student’s course grade.

The laboratory schedule and course syllabus addendum are available on Dr. Burkart’s website: http://sites.pc.gsu.edu/mburkart/.

Additional information may be found on the Dunwoody Campus Chemistry Lab webpage, http://depts.gpc.edu/~dunchelb/.

*Note: The course syllabus provides a general plan for the course; deviations may be necessary.
Laboratory Notebook

- Students are required to keep a lab notebook. The notebook should be brought to every lab session. To prepare for each laboratory, students must read the assigned lab in the lab manual.
- All observations, calculations, and data should be recorded into the notebook using blue or black ink. No pencil! No white out! All markings are permanent. To correct a mistake, simply draw a single line through the word or phrase in error. No pages may be torn or removed from the lab notebook.
- Prior to arrival in lab, students must read the lab and record the experiment title, date, purpose, and procedure in the notebook. The procedure should include enough detail so that the experiment can be completed with the notebook alone, without the aid of the lab manual.

The laboratory notebook should include:
- Title page – includes course title, section number, instructor, semester, date, and student name.
- Table of Contents – indicate each experiment title, date performed, and the beginning page number.

Overall format for writing up each experiment – Label each section as noted

1) **Experiment title and date performed**

2) **Purpose:** Write two or three sentences in your own words to explain scientific objective and the method used. If the experiment involves carrying out a chemical reaction, include the chemical equation.

3) **Procedure:** Write a concise but detailed list of steps indicating exactly what you must do to perform the experiment.

4) **Data/Observations:** Record all measurements you make (time, length, volume) and descriptions of what you see (color changes, precipitation).

***Note: All data/observations must be recorded directly into the notebook in real time. Data and observations cannot be transferred to the notebook at a later time.***

5) **Calculations:** Show ALL calculations required to determine the results. Calculations should show how the data are plugged into an equation and must include numbers and units. Percent error should be calculated when appropriate to compare known and experimental values. All graphs prepared during analysis of the experiment should be taped in the notebook.

6) **Conclusions:** Restate and discuss major experimental results. Discuss experimental sources of error. When possible an experimental value should be compared to a known or theoretical value. The source of the known value should be cited. The conclusion should address scientific and practical significance. It should not contain personal comments such as “this experiment was fun.” A statement such as, “this experiment was successful,” is unacceptable without explanation.

Each section must be clearly labeled. Leave appropriate space between sections to make notes and observations.

Your lab notebook will be reviewed and graded for specific content at the end of each class. The laboratory instructor must sign your notebook before you leave each session. Be prepared to turn over your lab notebook at any time. Your lab notebook will also be collected at the end of the semester to be graded for completeness and proper use.

The following is a list of guidelines for preparing the lab notebook.

- Write directly in the notebook.
- Write in ink; do not use white-out.
- Entries should be impersonal. Do not use I, we, he, you, etc.
- Do not tear pages out.
- Write on the right page only.
- Notes and personal scribbling may be written on the left side of the page. They will not be graded.
- No photocopies. (Exception: graphs)
- Include a title page and table of contents in the front.
- Table of contents - page numbers are in the NOTEBOOK, not the manual.
- The notebook must be checked at the end of each lab.
- Purpose & Procedure
  - Must be done when you enter the lab.
  - DO NOT copy directly from the manual. Use your own words.
- Conclusion -
  - Restate your specific results.
  - Comment on your results. Discuss experimental sources of error.
  - Compare your results to accepted/known values, if available. [Percent error]
  - Write in the past tense. For example, “The density of the metal cylinder was determined to be…”
  - Include scientific significance and practical significance of the experiment. What did you learn?
  - No personal comments.
  - Explain everything you state. Ex: “This experiment was successful.”
Analysis Sheets
For certain experiments, students must turn in experiment-specific information. This will be turned in either before leaving class or at the beginning of the next lab session, as indicated by the instructor. Each section must be labeled. The instructor will reveal exactly what needs to be turned in during class; this may vary from experiment to experiment. Typically, the analysis sheet will consist of information such as the following:

- **Data (printed from the spreadsheet program or written neatly in ink)** – Indicate in table form the raw data collected during the experiment.
- **Sample Calculations (written neatly in ink)** – Show sample calculations as indicated by the instructor.
- **Graphs (printed from spreadsheet program)** – Include all graphs prepared for the experiment. The graphs should be labeled completely and correctly.
- **Results (printed from the spreadsheet program or written neatly in ink)** – Indicate in table form all major results determined for the experiment.
- **Questions (written neatly in ink)** – Indicate the answers to any questions the instructor provides. Clearly label each question. For calculations, show all work and circle the answer. No credit will be given unless all work is clearly shown.

The student’s name(s) and the page number must be written on each page.

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Quizzes
In-class Quizzes will be given periodically throughout the term. Students should be prepared to take a quiz at the beginning of each lab session. The questions on the quizzes will include the following:

- Calculations similar to those carried out for previous lab experiments.
- Questions similar to those answered in previous lab experiments.
- Questions related to experimental procedures.
- Questions related to the instructor’s pre-lab discussions.
- Questions related to the reading preparation for that day’s experiment.

The only electronic device allowed during exams and quizzes 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

**Note:** A student who arrives to lab late may not be allowed to take the quiz. In this case, the student will receive a zero for that quiz. No extra time will be given to those who show up late.

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Laboratory Reports
These guidelines should be followed when writing laboratory reports:

- **General Presentation**

  - **Clarity** – The paper should be written in complete sentences using proper grammar and spelling.
  - **Label** – Label each major section (e.g. Data, Calculations, Results, etc.).
  - **Impersonal** – The paper should be written without reference to yourself. Do not use I, we, he, you, etc. State the facts and observations in the past tense. Do not report your emotional relationship to the work.
  - **Spelling** – All words should be spelled correctly. Word processing programs have the capability to print subscripts, superscripts, and special symbols such as Δ, λ, degrees ° etc. Students are expected to use these.
  - **Presentation** – The paper should be typed using a word processor, except for the sample calculations and questions. The paper should be neat and properly assembled. The pages should be numbered. The paper should be stapled together before you turn it in. Do not put it in plastic covers or binders.

- **Title Page**

  Each paper should include a cover page that lists the following information.
  - Experiment title
  - Student name
  - Date experiment was performed
  - Date paper is submitted
  - Lab Partners
  - Instructor

- **Intro**

  The introduction should include the experiment objective and background information. Chemical equations should be included. Mathematical equations / calculations should not be included in the introduction section.

- **Data**

  Data are the measurements and observations made during the experiment. The data should be organized neatly and logically in table form. The table must be labeled so that all values within it are clearly identified. Include appropriate graphs. If the data need to be graphed, this should be done so that the graph is as large as is practical. The axes should be labeled.

- **Sample Calculations - handwritten in ink**

  The student should prepare one example of each type of calculation needed in the experiment using his/her own data. Sample calculations indicate how the calculation is set up; numbers and units should be substituted into the calculation set-up. A sentence that indicates what the calculation does may be included also. Include the appropriate units (mol/L, nm, etc.) with all values.

- **Results**

  The results should be tabulated neatly and logically separate from the data. The table must be labeled so that all values within it are clearly identified. In some cases, it may be necessary to make a statement that clarifies the result.

- **Discussion**

  From a researcher’s perspective, the student should explain what scientific information he/she learned from the experiment and why this information is important. The student should discuss her/his major result and experimental sources of error. This is not meant to be a discussion of the student learning objectives of the assignment. DO NOT write about what the student learned from the assignment. For example, do not write that the student learned how to use equipment or that the student learned about the experimental method.

***Note: No outside sources should be used in the laboratory report. It is a paper presenting the student’s own perspective on her/his results. The report must be written in the student’s own words – no quoting of outside sources.***

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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.

All of your assignments and experiments must be your original work. Your only source of outside assistance is your laboratory instructor. Cheating includes copying or using any data from another person, falsifying data by alteration or invention, or in any way submitting work or data not actually as you measured it while performing the experiment in this laboratory during the current term.

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/.

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 quality 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.

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/

***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.***

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/~wwwfhb/sec401.html#401.03
https://catalog.gsu.edu/associate20162017/university-academic-regulations/#dropping-classes-and-voluntary-withdrawal