CHEM 1211  

Principles of Chemistry I

Spring 2019

Instructors

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Workshop questions?

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See your WS leader first then Dusty.

Lecture

Monday, Wednesday

9:30– 10:45

Workshop

Varies

Purpose

This is the first course in a two-semester sequence covering the fundamental principles and applications of chemistry for science majors. The course satisfies Core Requirement in Area D. Topics to be covered include components of matter, chemical reactions and stoichiometry, gas laws, thermochemistry, quantum chemistry, atomic structure and properties, molecular models and chemical bonding. A guided inquiry approach will be used in both lecture and laboratory to promote active student learning as well as logical thinking and analytical reasoning in problem solving. Chemistry encompasses a wide array of phenomena. Photosynthesis, combustion of fuels, and reactions in the atmosphere are a few examples. Interestingly, the human body may be considered a laboratory with a large number of reactions in progress simultaneously. Fortunately, diverse chemical phenomena are systematically studied using the concepts of structure, energetics, kinetics and equilibria. These concepts are a central theme in Chemistry 1211.

Required Materials (Text, homework, response system)


- Access to CourseDen is required to watch the videos for the class.

- A non-programmable calculator is required for your final.
**Learning Outcomes**

Each student will acquire a basic understanding of the following topics: the history of chemistry and the state of where we are today, mass mole relations, measurement and units, solutions, stoichiometry, reactions in aqueous solution, thermodynamics and electrochemistry. They are also expected to acquire an awareness of the role of chemistry in everyday life. Students will also learn to apply the scientific method in laboratory activities, collect and analyze scientific data and formulate appropriate conclusions from data analyses and communicate their findings.

Using classroom technology will free up much time during each session to put what you learn into practice. This, of course, is what we strive to do when teaching chemistry. A trade-off to this is that more emphasis will be placed upon you, the student, to do more independent learning outside of class.

The course has **two components 1) “lecture”, and 2) workshop.** As a result, I expect that you will spend more time outside of class working on course material than in “standard” courses. This will be necessary to perform well in the class. Group study is a method we want to promote strongly in helping you succeed in this course. Peer to peer teaching and learning is a very effective way to study the material.

We hope that this course will ultimately result in an enjoyable learning experience.

**Course Policies and Guidelines**

- The official communication method between the instructor and students will be through email. Please provide an alternative e-mail account in case of campus mail outages.
- **ALL** of the course materials including the syllabus, class-notes, and sample exams are available through CourseDen as they become available.
- The class meets on Monday and Wednesday 9:30 – 10:45 am.
  - *Please come to class on time, return promptly, and do not leave early.*
- You are expected to behave professionally in this course, which means considering the effect that your behavior will have on other people involved in the course.
- Turn off pagers and cellular phones, and do not use them in class.
- Distracting use of personal laptops is not permitted in the classroom.
- Eating or drinking in the classroom/laboratory will not be allowed.
- You will earn a failing grade in the course > than 30% of in-class activities are missed.
- **No** make up quizzes or exams will be given. In case of an illness or a dire emergency, the instructor must be contacted prior to the examination in-person, via phone or email. Accommodations for missed exams, quizzes and assignments will be handled between the student and the instructor and depending on the severity of the situation.
- Strategies to **succeed** in this class
  1. Come to class, quit unnecessary socializing (text messaging, talking) during class.
  2. Read the textbook, take good notes, participate in productive collaboration with peers, review notes, practice problems and actively participate in workshop.
  3. Based on your background in high school, the recommended number of hours you should study **on your own** for CHEM 1211:
     - Made a 4/5 on AP Chemistry : 3 hrs/week
     - Took AP Chemistry but scored a 3 or lower: 6 hrs/week
     - Took Honors or Pre-AP Chemistry: 9 hrs/week
     - Took Regular Chemistry two years ago: 12 hrs/week
     - Took Physical Science only and no Chemistry: 15 hrs/week
E-mail Policy

The primary means of communication with the instructor will be via e-mail. Since email has proliferated, and now constitutes the bulk of extra-classroom conversation between student and instructor, it must be subject to normal rules of formality. Therefore, all e-mail communication will follow the guidelines enumerated here. E-mail should be composed in formal, professional language, and with attention to the propriety accorded to the position of the writer, and the addressee. E-mails that do not meet these standards will not be returned by the instructor. E-mail should not ask questions whose answers are contained in the course syllabus. Such e-mail will not be returned by the instructor. Students should avoid asking questions in e-mail that should be raised either in class, or in individual consultation with the instructor. These include questions of an excessively conceptual nature, and questions that expect an unreasonable amount from the instructor. A good rule of thumb: if you question cannot be answered in two sentences or less, or if it is a question that you should solve on your own through the course of your reading, then it is not appropriate for e-mail. Lastly, e-mail will only be answered during normal work hours (9am – 5pm) Monday through Friday. E-mails sent outside of those hours, or on the weekends, will not be returned until the resumption of normal business hours.

In-Class Assignments

These assignments include computer assignments, laboratory activities and announced/unannounced quizzes where you may need to use a scientific calculator and the textbook. These will be scored primarily with the CHEM101 response system. YOU WILL NEED TO USE THE SYSTEM TO GET CREDIT FOR THESE ASSIGNMENTS. Remember to bring your calculators, notecards, and textbooks to class every day since you cannot share these resources. All of the results from in-class activities will be submitted to the instructor before leaving the class. Late assignments will not be graded. There will be no makeup sessions for missed assignments.

Homework

My initial advice for excelling in this course is: take your homework seriously. “Homework” in college is conceived of quite differently than in High School. We mean: READ YOU BOOK. WATCH YOUR VIDEOS, DO YOUR WORKSHOP PAGES. In High School, homework means “points,” here, it is how you ensure you’re prepared for class, because you’re EXPECTED to come to class prepared. You will not be taught by “reading the book in class,” as may have happened in K-12. It is in this way that you will engage with the material, and it is only through engaging with (and struggling with!) the material that you will come to understand it. You have a lot to do outside of class:

- Read the book
- Watch the videos
- Do the workshop materials
- Take your check point quizzes

The best way to get good at something (e.g. problem solving) is by practice.

You can do practice problems in the book, or we can give you extra problems to work on if you would like, and can go over them in office hours or in class.
Examinations

There will be four examinations and a comprehensive final examination during the semester. Each examination will be closed book and notes. You will need to bring a calculator to the tests. If necessary, I will provide the scantron sheets, periodic charts and conversion tables during the tests. In order to get full credit on tests, quizzes and other assignments, you must SHOW ALL WORK AND CALCULATIONS. Points will be deducted if you have correct responses with incomplete calculations and/or explanations.

The standardized examination from the American Chemical Society will serve as the final examination. It consists of multiple-choice questions, and is prepared by the American Chemical Society. Use of graphing calculators will NOT be allowed for the ACS exam. Currently, regular scientific calculators are acceptable. DO NOT MARK IN THE EXAM BOOK! If there is a conflict with the final exam time, you must provide me with written authorization from the Dean of Arts & Sciences to move your final exam time.

The dates for the in class exams are:

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<tr>
<td>1</td>
<td>Wednesday, 30 January</td>
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<td>Wednesday, 25 February</td>
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<td>3</td>
<td>Wednesday, 25 March</td>
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<td>4</td>
<td>Monday, 29 April</td>
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COMPREHENSIVE FINAL: WEDNESDAY, 1ST MAY 2019 @ 11:00 A.M

In Class Quizzes

Given that you will be working SO much outside of class, I want to be able to maximize our time together in class, where you can benefit from my guidance. Therefore, I will not be giving regular (on paper) in class quizzes. Plenty of assessment and feedback is generated by the online homework and end of chapter quizzes.

However, we are using an automatic response system for regular daily, in class quizzes. Anticipate at least three questions per session. The average of all of your clicker quiz grades will count as part of your final grade one of the quizzes in the Quiz category.

You will also be turning in daily notecards. These will be graded on scale from 0-3. The cards will have the following 1) your name and the date, 2) the clearest point from the assigned video/reading, and 3) the muddiest point from the assigned reading/video. The average of the notecard scores will be counted as a quiz in in the Quiz category.
**Flipped Class Structure**

I will adopt an inverted classroom structure for this course. I will record a video version of the lecture and post it to CourseDen. Anticipate 2-3 videos of 15 min. each to watch before class each session. You will be quizzed on that material. Be prepared each day to discuss the material, work on problems, or conduct other non-traditional activities. Bring your books, calculators, paper, pencils and enthusiasm. To insure that you actually WATCH the videos, a short quiz will be available at the end of each unit.

**Workshop Chemistry**

In addition to regularly scheduled lecture (and laboratory sessions), you will be REQUIRED to attend a 1.5 hour long workshop to discuss chemistry problems and improve your understanding of the material. Your workshop will be led by an upper-level student leader who will facilitate activities that provide practice and build confidence in your ability to solve chemistry problems. Workbooks for the workshop will be distributed in class and must be brought to workshops every week.

**Workshop Grades**

You are not judged on actual right answers, but the effort you put into the workshop. The workshop portion of your grade, will be based on: 1) Attendance. Do not arrive late; do not leave early. 2) Participation in group efforts to solve problems. 3) Preparation. Practice problems assigned from the textbook by your instructor should have been solved, or at least attempted, before the relevant workshop. Workshop leaders will randomly choose problems from the list to assign points for this part of the workshop. 4) Attitude.

**Academic Honesty Policy**

We take academic honesty very seriously. Plagiarism of any sort will not be tolerated. Plagiarism is the use of someone else’s ideas or words as your own. This definition includes copying another student’s exam or assignment, as well as using material from a book or Internet site without acknowledging the source. For example, copying results from an online example paper is wrong. Using literature values taken from Wikipedia for comparison to your results is wrong if you do not indicate where those values came from. Failing to put your partners’ names on your report is wrong. “Working together” on a take home quiz or test: wrong. If you plagiarize any part of an assignment for this course, you will receive a zero for the entire assignment, and disciplinary action will be taken. If an individual is caught cheating a second time during the semester, he/she will receive a grade of F for the entire course.
**Semester Grades**

All exam, quiz and lab activity grades will be based on your ability to DEMONSTRATE full understanding of the material. Full credit will only be given if you SHOW ALL OF YOUR WORK, not just for obtaining the correct answer. I will configure CourseDen to show your current grade standing based on material completed.

Your grade will be calculated based on the following components:

- In-class exams (4) = 55%
- Final Exam = 15%
- Workshop Average = 15%
- Quizzes (ICRS, Unit Quiz Avg, Note Cards) = 15%

Final letter grades will be assigned based on the following performance brackets: Standard rules for rounding will be applied.

\[90\% \text{ and up} = A \] \[80 - 89\% = B \] \[70 - 79\% = C \] \[60 - 69\% = D \] \[< 60\% = F\]

All Students Please Note!

For important policy information, *i.e.*, the UWG Honor Code, Email, and Credit Hour policies, as well as information on Academic Support and Online Courses, please review the information found in the Common Language for Course Syllabi documentation at [http://www.westga.edu/assetsDept/vpaa/Common_Language_for_Course_Syllabi.pdf](http://www.westga.edu/assetsDept/vpaa/Common_Language_for_Course_Syllabi.pdf). Additions and updates are made as institution, state, and federal standards change, so please review it each semester.
How to Study Chemistry

You should start by familiarizing yourself with the textbook. Read the author’s preface to see what is included in the text and what other resources are available for help. Look at the appendices to see what information is contained there for later use.

You should prepare for lecture by skimming ahead in your textbook. You may not understand all of the material, but it will familiarize you with new terms and equations and by doing this lecture will become much more beneficial.

As soon as possible after lecture you should review your lecture notes and the textbook. Then begin working the in-chapter problems. Only continue when you completely understand the problems. Chemistry builds on itself and if you do not understand a topic now it will only make later topics more difficult. In addition, this chemistry course sets the foundation for later chemistry courses, if you do not learn the material now it will make later courses much more difficult.

When you have completed the chapter proceed to work the end of chapter problems immediately. These problems are an excellent barometer to determine whether you understand the material. Treat the homework problems as if they are test questions and do not look elsewhere for help. If you can work the problems without looking anywhere else for help then you know and understand the material. If you cannot do the problem without help then you need to stop doing homework and reread the pertinent area of the textbook and lecture notes until you are ready to try the problem again. DO NOT look in the solutions manual until you have finished the problem. You will learn more by sticking with a problem to finally solve it then by looking in the solutions manual. Chemistry is best learned by doing, so work as many problems as you can.

You must keep up. This course will move quickly and if you are not studying daily then you will find it to be quite difficult. While it will be necessary to memorize some information like equations and formulas, memorization without understanding is useless. You must learn how and when to use equations to be successful. Also, because of the volume of information you will see you will not find success by “cramming.” If you do not start studying until the week of the test I guarantee you will not be successful. You may also find study groups to be helpful. When you teach and explain topics to your fellow students you will find that you learn those topics even better.

Finally, do not hesitate to use office hours. These hours are set aside for you, so take full advantage.
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<td>Chemical Reactions and Quantities: Stoichiometry</td>
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