

# CHEM 1211

Fall 2018

# Principles of Chemistry I



## Instructors

Dr. Douglas A. Stuart

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Dusty Ottwell

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Workshop questions?

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)

- *Chemistry: Structure & Properties*, second edition by Nivaldo Tro (ISBN 0134293932) is **required**.
- An iClicker remote is required, and they are available at the bookstore. You will need to bring it to class *every day* to get points on in-class quizzes.
- 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
  - Come to class, quit unnecessary socializing (text messaging, talking) during class.
  - Read the textbook, take good notes, participate in productive collaboration with peers, review notes, practice problems and actively participate in workshop.
  - 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
  - Visit me during my posted office hours or find a FREE tutor ([http://www.westga.edu/excel/index\\_3270.php](http://www.westga.edu/excel/index_3270.php)) or supplemental instructor ([http://www.westga.edu/excel/index\\_16183.php](http://www.westga.edu/excel/index_16183.php)) at the Excel Center.

## **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 iClicker response system. **YOU WILL NEED TO USE THE CLICKER TO GET CREDIT FOR THESE ASSIGNMENTS.** Remember to bring your calculators, iClickers, 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*. 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 online homework
- Do the workshop materials
- Take your check point quizzes

The best way to get good at something (e.g. problem solving) is by *practice*. To that end, I am making you use MasteringChemistry, and online homework system. Access either comes pre-bundled with your text, or you can get a code here:

[goo.gl/BquXVb](http://goo.gl/BquXVb)

And you'll be joining the following course:

CHEM1211FALL2018STUART

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:

<b>Exam 1:</b>	<b>Wednesday, 05 September</b>
<b>Exam 2:</b>	<b>Wednesday, 03 October</b>
<b>Exam 3:</b>	<b>Wednesday, 31 October</b>
<b>Exam 4:</b>	<b>Wednesday, 05 December</b>

**COMPREHENSIVE FINAL: WEDNESDAY, 12<sup>TH</sup> DECEMBER 2018 @ 8:00 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. We will register the clickers in class *after* the drop/add period.

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 D2L to show your current grade standing based on material completed.

Your grade will be calculated based on the following components:

In-class exams (4)	= 50%
Final Exam	= 15%
Workshop Average	= 15%
Quizzes (Clickers, Unit Quiz Avg, Note Cards)	= 15%
Online Homework	= 5%



Final letter grades will be assigned based on the following performance brackets:

**[90% 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 than 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.

## *Tentative Schedule for the Course*

#	Day	Date	Chapter	Subject	Note
1	W	15-Aug	1	<i>Essentials: Units, Prob Solving, Dim.Anal.</i>	
2	M	20-Aug			
3	W	22-Aug	2	<i>Atoms: Quantum Mechanical Model</i>	
4	M	27-Aug			
5	W	29-Aug	3	<i>Periodic Trends</i>	
	M	3-Sep		<b>LABOR DAY NO CLASS</b>	<b>NO CLASS</b>
6	W	5-Sep	CH 1-3	<b>EXAM 1</b>	<b>EXAM 1</b>
7	M	10-Sep	4	<i>Molecules and Compounds</i>	
8	W	12-Sep			
9	M	17-Sep	5	<i>Chemical Bonding I Lewis, VSPR, Polarity</i>	
10	W	19-Sep			
11	M	24-Sep			
12	W	26-Sep	6	<i>Chemical Bonding II VB and MO</i>	
13	M	1-Oct			
14	W	3-Oct	Ch 4-6	<b>EXAM 2</b>	<b>EXAM 2</b>
15	M	8-Oct	7	<i>Chemical Reactions and Quantities: Stoichiometry</i>	withdraw W day
16	W	10-Oct			
17	M	15-Oct			
18	W	17-Oct			
19	M	22-Oct	8	<i>Solutions and Aqueous Reactions</i>	
20	W	24-Oct			
21	M	29-Oct			
22	W	31-Oct	Ch 7-8	<b>EXAM 3</b>	<b>EXAM 3</b>
23	M	5-Nov	10	<i>Gases</i>	
24	W	7-Nov			
25	M	12-Nov			
26	W	14-Nov			
	M	19-Nov		<b>THANKSGIVING BREAK</b>	<b>NO CLASS</b>
	W	21-Nov		<b>NO CLASS</b>	<b>NO CLASS</b>
27	M	26-Nov	9	<i>Thermochemistry</i>	
28	W	28-Nov			
29	M	3-Dec			
30	W	5-Dec	Ch 9-10	<b>EXAM 4</b>	<b>EXAM 4</b>
		<b><u>12-</u></b> <b><u>Dec</u></b>	<b><u>ALL</u></b>	<b><u>FINAL EXAM</u></b>	<b><u>8:00 AM</u></b>



STUDENT AGREEMENT: CHEMISTRY 1211

Should you require a paper copy of this document, one is provided below.

Please acknowledge that you are prepared to start class by initialing the following statements and signing the document below. This will help to ensure that we are all aware of the basic operation for basic instruction in chemistry.

<u>Statement</u>	<u>Initial</u>
1. I have read the syllabus.	-----
2. I know how to calculate my grade.	-----
3. I am aware of the policy on missing work.	-----
4. I know when I will have exams and quizzes.	-----
5. I am aware of the e-mail policy.	-----
6. I know who to ask about HW, lab, and/or general questions	-----
7. I know I can get lecture notes and other material on-line	-----
8. I know I need to bring my iClicker to every class.	-----
9. I know I will not be allowed a graphing calculator on the final.	-----

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Printed Name

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Signature

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Date