

Chemistry 1212
Principles of Chemistry II
Spring 2016



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W 1:30 pm – 4:30 pm
**and by appointment

Course Information

Class: Chem 1212 (01 – 80621; 02 – 80935; 03 – 80623; 04 – 80936)
Meeting Times: Lecture – M/W 11:00 am – 12:15 pm (Sections 01, 02, 03, 04)
Workshop – Tu 9:00 am – 10:30 am (Sections 01, 02)
Tu 11:00 am – 12:30 pm (Sections 03, 04)

Room: TLC 3108 (Lecture)

Modified Mastering Chemistry Course ID: mcphail63191

Course Description

Second course in a two-semester sequence covering the fundamental principles and applications of chemistry for science majors. Topics to be covered include chemical bonding, properties of solids, liquids and gases, solutions, equilibria, acids and bases, solubility, thermodynamics, kinetics, and electricity.

Required Materials:

Chemistry: Structure and Properties (1st ed.) by Nivaldo J. Tro
Registration Code for Modified Mastering Chemistry program (included with new textbooks or available at www.pearsonmylabandmastering.com/northamerica/)
iClicker (available at the bookstore) either Gen 1 or 2

Learning Outcomes

1. *Foundational Knowledge:* Students will be able to use chemical terminology to describe chemical equilibria, kinetics, and phase behavior.
2. *Foundational Knowledge:* Students will be able to apply logical and mathematical reasoning skills to interpret provided chemical information.
3. *Application:* Students will apply their knowledge and thinking skills to interpret chemical observations.
4. *Integration/Caring:* Students will draw connections from course material to topics in other fields of study and modern scientific issues.
5. *Learning to Learn:* Students will develop methods for structuring their study habits, assess personal strengths/weaknesses, become a member of a learning team, and actively engage with text-based materials.

Course Assessment

Students' progress towards mastery of the learning outcomes will be tracked and assessed via:

Workshop & Homework (20%)

Workshops are a key component of the department's strategy to facilitate cooperative learning through peer-led, group work. Developing the skills to work and learn as a part of a team are fundamental to success at the undergraduate, graduate, and professional levels. Your attendance, participation, and performance in workshop will contribute towards your final grade.

Homework will be assigned and graded through the Pearson Modified Mastering Chemistry program. There will be homework assignment posted **after each class period** and due **before the start of the following class**. This assignment will cover advanced application of the concepts covered in the previous lecture and basic ideas for the next lecture, so you will need to review material covered in the previous lecture as well read the sections from the text that will be covered in the next lecture. **10% credit is deducted per day late on any assignment.**

Clicker Questions (10%)

Questions will be posed at various points during lecture to enable active engagement with the material and interactive feedback between students and instructor. Responses will be tracked and logged through the iClicker system, so it is necessary for you to bring a functioning iClicker to every class period. **Using an iClicker registered to another student is cheating.** To prepare for possible questions during lecture, each student is **highly encouraged** to read the listed material for that day prior to class.

Mid-term Exams (15% x 4)

Four mid-term exams will be given in-class over the course of the semester. These exams will not be comprehensive; each exam will cover material covered in lecture since the previous exam. Calculators will be permitted on each exam, but notes, reference materials, and devices with additional app functionality are not. A periodic table and sheet of equations will be provided with each exam. Sharing of calculators is prohibited. **No make-up exams will be given.** In the event of a missed exam, your final exam will replace that exam grade.

Final Exam (10%)

The final will be the American Chemical Society standardized test, which will cover **both Chemistry 1211 and 1212**. In the event that your score on the Final Exam is higher than your lowest mid-term exam grade, the Final Exam will replace that grade.

Grading Scale

A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69
F	0 – 59

Course Policies and Information

‘Curving’ Policy

In the event that the average exam grade falls below 75%, exam grades will be adjusted or ‘curved’ using a linear scale to ensure an average exam grade of 75%.

Extra-Credit Policy

No extra credit is accepted for this course.

Make-up Policy

No make-up work will be given for this course. In the event of a missed mid-term exam, the final exam score will replace the score for the missed exam. If an emergency forces a student to miss a day’s clicker question or homework assignment, that assignment will be waived **only if official documentation is presented**. A maximum of **two exemptions total** will be allowed. In the event that exigent circumstances force a student to miss multiple class periods, it is highly encouraged that a **hardship withdrawal** is taken.

Student Conduct

Students are obligated to abide by conduct guidelines as described in the university catalog. Respect and courtesy of all students while in the classroom is required. The following are also mandatory:

1. Any disruptive behavior will result in your expulsion from the room. If disruptive behavior persists you will receive a minimum of a one letter-grade deduction from your overall grade as well as possible additional action depending on the severity of the behavior.
2. All electronic devices must be silenced during lecture. Calls may only be answered in the case of emergencies by stepping out into the hall. **Laptops and tablets are permitted**, but if your use of these devices becomes disruptive their use will be disallowed for the remainder of the semester.

Please feel free to contact me with any questions regarding the above. Following “common sense” behavior should prevent any of the above problems. Failure to adhere to conduct guidelines could result in *dismissal from class, a deduction from your final course grade, as well as further disciplinary action*.

University Policies and Academic Support

Please review the Common Language for all university course syllabi at the address:

http://www.westga.edu/assets/Dept/vpaa/Common_Language_for_Course_Syllabi.pdf

This document contains important information regarding university policies and responsibilities. You should regularly review these statements because they are updated as federal, state, university, and accreditation standards change.

Academic Honesty

Any form of academic dishonesty—including but not limited to cheating or plagiarism—will result in a failing grade on the relevant assignment as well as possible additional action. Please be familiar with the definitions of academic dishonesty and plagiarism as laid out in the Student Handbook, which can be found at the link: <http://www.westga.edu/handbook/>

Disabilities Act / Accessibility for the Course

If you are a student with a disability as defined under the Americans with Disabilities Act and require assistance or support services, please notify me and provide me with a copy of your packet from Student Services. The university will provide you with resources for any audio/visual needs that you may have with the learning management system or course content.

It is critical that you contact UWG Accessibility Services immediately to find out what accommodations are necessary so we can work together to facilitate your success in this class. Please consult the UWG Accessibility Services site <http://www.westga.edu/accessibility> or call (678) 839-6428 for more details regarding accessibility for this course.

Note on Syllabus Modifications

I reserve the right to modify this syllabus at any time during the course of the term, particularly with regards to course schedule. Students will be notified of all syllabus modifications. In a case where a substantial modification is required, I will reissue a revised syllabus.

Tentative Schedule

	Monday	Wednesday
Week 1 (Aug. 8, 10)	NO CLASSES	12.2, 12.3 Phases of Matter Intermolecular Forces
Week 2 (Aug. 15, 17)	12.4, 12.5 Surface Tension, Viscosity, Capillary Action Vaporization/Vapor Pressure	12.6, 12.7, 12.8 Sublimation/Fusion Heating Curves Properties of Water
Week 3 (Aug. 22, 24)	13.2, 14.2, 14.3 Phase Diagrams Solubility & Solution Energetics	14.4, 14.5 Solution Equilibria Concentration Units
Week 4 (Aug. 29, 31)	14.6, 14.7 Colligative Properties	15.2, 15.3 Collision Theory Definition of Reaction Rates
Week 5 (Sept. 5, 7)	NO CLASSES	Exam 1
Week 6 (Sept. 12, 14)	15.4, 15.5 Differential Rate Laws Integrated Rate Laws	15.5, 15.6 Reaction Half-Lives Arrhenius Theory

Week 7 (Sept. 19, 21)	15.7, 15.8, 16.2 Reaction Mechanisms & Catalysis Dynamic Equilibria	16.3, 16.4, 16.5 K_c & K_p Heterogeneous Equilibria
Week 8 (Sept. 26, 28)	16.6, 16.7, 16.8 Reaction Quotients Calculating Equilibrium []s	16.9, 17.2 – 17.4 Le Châtlier's Principle Acid/Base Strength
Week 9 (Oct. 3, 5)	17.5 – 17.8 K_w , K_a , and K_b pH, pOH, pK_a , pK_b Strong Acid & Base Calculations	Exam 2
Week 10 (Oct. 10, 12)	17.7 – 17.9, 17.11 Weak Acid & Base Calculations pH of Salt Solutions Lewis Acids and Bases	18.2, 18.3 Buffers Henderson-Hasselbalch
Week 11 (Oct. 17, 19)	18.4 Acid/Base Titrations	18.5, 18.6, 18.7 Solubility Product Formation Constant
Week 12 (Oct. 24, 26)	19.2, 19.3, 19.4 Entropy and Spontaneity Changes in Entropy	19.5, 19.6 Entropy of Surroundings Gibbs Free Energy
Week 13 (Oct. 31, Nov. 2)	19.7, 19.8, 19.9 ΔG for Nonstandard Cond. Calculating K from ΔG	Exam 3
Week 14 (Nov. 7, 9)	20.2 Identifying and Balancing Redox Reactions	20.3, 20.4 Galvanic Cells Standard Electrode Potentials
Week 15 (Nov. 14, 16)	20.5, 20.6 E°_{cell} , ΔG° , and K E_{cell} for Nonstandard Conditions	20.7, 20.8, 20.9 Batteries, Electrolysis, and Corrosion
Week 16 (Nov. 21, 23)	NO CLASSES	NO CLASSES
Week 17 (Nov. 28, 30)	Exam 4	Review for the ACS Final

Final Exam: Monday, December 5, 11:00 am