

General Chemistry Chem111 (Section 4)

University of Mary Washington
Fall 2019

Lecture TR 9:30 - 10:45 PM (Jepson 454)

Laboratory T 2:00 - 4:45 PM (Jepson 210)

Instructor Dr. Charles Sharpless Jepson 441 (654-1405) csharp@umw.edu

Office Hours Walk-in: W (10-12 & 1-3), F (10-11) Appointments also welcome!

Course Websites Lecture notes, prelab powerpoints, and grades (<https://canvas.umw.edu/login>)
ALEKS (<https://www.aleks.com/login>)

Required Course Materials (available at the bookstore)

Textbook: *Principles of Chemistry: A Molecular Approach*, 3rd ed. (N. Tro)

ALEKS Subscription: Available at the bookstore

Lab Coursepack: For section 4

Lab Notebook: With carbonless duplicate pages

Safety Equipment: Laboratory goggles and lab coat (at bookstore)

Calculator: Non-programmable, with scientific notation and exponential functions. The TI 30 series calculators at the bookstore are perfect.

General Education and Course-Specific Learning Objectives

This course in part satisfies the Natural Science General Education requirement. After completing the course sequence, a student should be able to:

- describe the scientific methods that lead to scientific knowledge
- report and display data collected, interpret experimental observations and construct explanatory scientific hypotheses
- use theories and models as unifying principles that help us understand the natural world
- identify current issues in which scientific progress may challenge traditional social ideas or present moral or ethical dilemmas

The lecture portion of this course serves as an introduction to the fundamental concepts of modern chemistry, such as the basis for chemical bonding and reactivity and more generally the physical models used by scientists to explain nature. By the end of the course, you should understand these concepts and be able to solve problems related to chemical principles. The laboratory portion of this course is designed to give you hands-on, practical experience in chemistry and develop your ability to design and conduct scientific experiments.

Grading

40%	Four 50 min. in-class exams
25%	Laboratory
20%	Final exam
12%	ALEKS objective completion
8%	ALEKS pie completion

Students with an average of C or below on 10/17 will receive a mid-semester deficiency report.

Important *To proceed to Chem112, you must obtain a C- or better in Chem111*

** No late assignments will be accepted without my prior consent.*

** Missed laboratories and exams may not be made-up. If you know in advance that you will miss a lab or an exam you must contact me ahead of time. In case of an emergency, a lab or exam may be made up if you contact me as soon as possible to inform me of your situation.*

Exams There will be four closed book exams throughout the semester. Each one is worth 10% of your grade. The dates are announced on the syllabus schedule (last page). For exams, the chemistry department will provide non-programmable calculators, which must be used. The only thing you will need to bring is a writing implement.

Laboratory Consult your laboratory course pack (required, and available at the bookstore).

Final Exam The final exam is the American Chemical Society National Standardized Exam. It is cumulative and will be given on the date noted in the schedule. It is worth 20% of your grade. In accordance with University policy, any student who does not take the final exam will fail the course.

Practice Homework Problems End-of-chapter problems from the textbook have been assigned and posted on Canvas. To succeed in chemistry, it is essential that you do these problems. These are not graded per se, but completed problem sets are worth 3 extra points on the corresponding exam grade. To receive these points, the problem sets must be turned in on the due dates specified on Canvas. Answers to these questions are in the back of the book and detailed solutions for some can be found in the solutions manual. There is no better way to improve your chemistry problem-solving ability than to practice. Working in groups can be helpful, but you must ensure that you can do the problems yourself. If you have difficulty with these, please come to my office hours or PASS sessions.

Class Attendance Attendance at lecture is highly recommended and is mandatory for lab. The material covered in lecture will frequently differ in emphasis from the textbook. Also, lecture time will be used to discuss example problems and address any questions or problems you have with them. Should you miss a class, you are nonetheless responsible for the material covered.

Classroom Etiquette If you arrive late to class, please enter quietly and seat yourself with minimal disturbance to your fellow students. Please refrain from eating in the classroom. Please turn off cell phones in class. Cell phones are prohibited from examinations. Please do not distract yourself and others by reading newspapers or browsing the web during class time, either on a laptop or a PDA.

Disability Resources Students who require or feel they may require accommodations due to a disability should visit the Office of Disability Resources online (<http://academics.umw.edu/disability/>). A detailed course-specific accessibility statement can be found here (<https://tinyurl.com/cmsumwpolicy>)

Honor System In accordance with the University's Honor Code, all work submitted for grading must be your own and be pledged as such by writing at the end of the work, "*I hereby declare upon my word of honor that I have neither given nor received any unauthorized help on this work. (your signature)*" It is your duty as students and mine as faculty to uphold the Honor Code, which is described in detail in the Guidebook & Constitution (<https://academics.umw.edu/academicintegrity/academic-integrity/guidebook-and-constitution/>). Suspected violations of the Honor Code will be addressed according to the policy established by the Honor Council.

Classroom Recordings Classroom activities in this course may be recorded by students enrolled in the course for the personal, educational use of that student or for all students presently enrolled in the class only. More policy details can be found at <https://tinyurl.com/cmsumwpolicy>.

Title IX Statement UMW is committed to supporting students and upholding the University's Policy on Sexual and Gender Based Harassment and Other Forms of Interpersonal Violence. Under Title IX and this Policy, discrimination based upon sex or gender is prohibited. If you experience an incident of sex or gender based discrimination, we encourage you to report it. You may talk to me, but understand that as a "Responsible Employee" of the University, I must report to UMW's Title IX Coordinator what you share. More information can be found at <https://tinyurl.com/cmsumwpolicy>.

How to Succeed in Chem111

- Spend about one hour per day on chemistry (reading, reviewing notes, doing problems)
- Attend lecture regularly, sit near the front, and take careful notes
- Attend PASS regularly (see below)
- Use your textbook wisely
 - Start by quickly skimming each chapter. Look at what seems familiar and unfamiliar, and use it to plan your reading
 - Go over each “Example Problem” in the chapters carefully and then try the follow-up “For Practice” that follow immediately after the examples
 - Take the self-assessment quizzes at the end of each chapter
 - Note that there is a glossary of terms in the back of the book that you may find useful.
- Do the reading assignment before coming to class
- Organize your class notes as soon as possible after coming to class
- Review the reading assignment after coming to class
- Do the practice problems alone and in groups
- Set aside time to get your online quizzes done before the due date
- Save and organize the work you do for online quizzes for future study
- Come to exam review sessions prepared with questions (thought-out beforehand)
- Seek the instructor’s help when needed (office hours, before/after class, email)
- If you require additional help, seek peer-tutoring through Academic Services (<http://academics.umw.edu/academicservices/>)

Peer-Assisted Study Sessions Peer-Assisted Study Sessions (PASS) are available for this course to assist you in better understanding of the course material. The PASS program provides peer-facilitated study sessions led by qualified and trained undergraduate leaders who attend the lectures with students and encourage students to practice and discuss course concepts in sessions. Sessions are open to all students and will focus on the most recent material covered in class. These sessions are not tutoring but rather sessions to compare class notes, review and discuss important concepts, develop appropriate strategies for studying, and prepare for exams. Attendance is free and voluntary, *you may earn up to three extra credit points towards your final course grade* by attending at least one PASS session per week for at least ten weeks. You must be present for an entire PASS session to get credit for that session; students who are disruptive will not earn extra credit points. Attendance will be recorded in order to keep track of extra credit points. You are free (and encouraged!) to attend as many sessions as you like, but credit will only be given as noted above.

Fall 2019 Weekly Schedule (subject to change)

Week Of	Chapter (Topic)	Lab
Aug. 26 th	1 (Introduction, Matter, Energy, & Measurements) 2 (Atomic Theory, Periodic Table, The Mole)	Check-In
Sep. 2 nd	2 (Atomic Theory, Periodic Table, The Mole) 3 (Ionic and Covalent Compounds, Nomenclature, Molar Mass)	Volumetric Measurements
Sep. 9 th	3 (Chemical Formulas, Chemical Equations) 4 (Stoichiometry, Reactions in Aqueous Solution, Exclude 4.9) <i>Friday, 9/13: drop period ends</i>	Empirical Formula
Sep. 16 th	4 (Stoichiometry, Reactions in Aqueous Solution, Exclude 4.9) <i>EXAM 1, Sep. 19th (Chapters 1 to 4.3)</i>	Solution Preparation
Sep. 23 rd	4 (Stoichiometry, Reactions in Aqueous Solution, Exclude 4.9) 6 (Energy, Enthalpy, Reaction Enthalpies)	Stoichiometry
Sep. 30 th	6 (Calorimetry, Hess's Law, Enthalpies of Formation) 7 (Electromagnetic Radiation, Atomic Spectra, Bohr H-atom model)	Thermochemistry
Oct. 7 th	7 (Atomic Orbitals, Electron Configurations) <i>EXAM 2, Oct. 10th (Chapters 4.4 to 6)</i>	<i>TBD</i>
Oct. 14 th	<i>No Class or Lab Tuesday – Fall Break</i> 7 (Electron Configurations – if needed) 8 (Periodic Properties) <i>Wed. 10/16 – Advising Period Begins!</i>	<i>Break</i>
Oct. 21 st	8 (Periodic Properties) 9 (Types of Bonding, Electronegativity, Polar Bonds, Lewis Structures) <i>Friday, 10/25: last day to declare P/F or withdraw from courses</i>	Project 1
Oct. 28 th	9 (Resonance Forms, Bond Energy Thermochemical Calculations) 10 (Molecular Geometry, VSEPR Model)	Spectroscopy
Nov. 4 th	10 (Molecular Polarity, Hybrid Orbital Bonding Theory)	Project 2
Nov. 11 th	<i>EXAM 3, Nov. 12th (Chapters 7 to 9)</i> 10 (Hybrid and Molecular Orbital Bonding Theories) 5 (Gas Laws, Partial Pressures, Kinetic Molecular Theory)	Molecular Geometry
Nov. 18 th	5 (Kinetic Molecular Theory, Real Gases)	TBD
Nov. 25 th	11 (Intermolecular Forces, Phase Changes) <i>No class Thursday – Thanksgiving Break</i>	Gas Laws
Dec. 2 nd	<i>EXAM 4, Dec. 3rd (Chapters 10 and 5)</i> 11 (Phase Changes, Structure and Bonding in Solids)	<i>Lab Final</i> Check Out
Dec. 9 th	CUMULATIVE FINAL EXAM: Tuesday, 12/10, 8:45-11:00 AM JEPSON 454	