

General Chemistry II with Lab, CHEM 112 Fall 2024

Professor: Prof. Eileen Clawson
Office: Jepson 214 (Chem 111 Lab)
Contact: eclawson@umw.edu, 540-654-1649
If you have an emergency, you can text me at 540-847-8133.
Lecture: MWF 12:00-12:50 pm, Jepson 219
Lab: Wednesday, 1:00-3:50 pm, Jepson 210

Office Hours: M 1:00-2:00 pm and F 10:45 am-11:45 am, or by appointment in person/Zoom

Required Materials:

- Text: Openstax Chemistry, 2nd edition, (It's free!)
- Subscription to Aktiv Chemistry – online learning tool; available through the Bookstore or directly from the website (aktiv.com)
- Chem 112 Lab Coursepack, lab notebook with carbonless duplicate pages, laboratory goggles and lab coat
- Calculator with scientific notation and logarithmic/exponential functions. You will only be able to use non-graphing calculators on all quizzes and exams. TI-30X calculators are available in the book store.

Web Site: This course will make use of the **Canvas** course management system. Please check here frequently as materials posted will include course announcements, assignments, lecture videos, and other course materials as necessary. Adjust your notification settings to be sure that you remain up-to-date on the course.

General Education Learning Objectives: This course satisfies the Natural Science General Education requirement. After completing the course, a student should

- Demonstrate understanding of scientific methods that advance scientific knowledge
- Be able to develop explanatory hypotheses for observations, report and display scientific data, and interpret data in a scientifically sound manner
- Use theories and models as unifying principles to understand natural phenomena
- Demonstrate understanding of how scientific methods and resultant knowledge are applied to address specific technological and/or societal challenges

Course-Specific Learning Objectives: Chemistry is everywhere, whether you realize it or not; it can be exciting, useful, or dangerous. After completing the General Chemistry II course, a student should

- Understand the chemical principles governing chemical equilibrium, kinetics, and thermodynamics
- Be able to solve problems related to chemical equilibrium, kinetics, and thermodynamics
- Have gained hands-on experience in the lab and learned how to conduct scientific experiments

In-Class Behavior: Please act respectfully in class of other students and myself. This includes turning your cell phone, etc. to silent during class time, using electronic devices only for note taking purposes or for team work, and arriving to class on time. You are expected to participate in all activities and discussions. I reserve the right to dismiss you from class if I feel you are acting disrespectfully, you are disrupting the class, or you are not following risk mitigation policies.

Honor System: In accordance with the University's Honor Code, **All** graded work (hourly exams, online exercises, extra credit assignments, graded assignments, final exam) must be your own and pledged as such **using the full honor pledge** as follows:

I hereby declare upon my word of honor that I have neither given nor received any unauthorized help on this work. Signed

Academic dishonesty in any shape or form will not be tolerated.

Suspected violations of the Honor Code will be addressed according to the policy established by the Honor Council. This includes the use of any website such as Chegg. Please familiarize yourself with the University's policies on academic dishonesty: ignorance is not an excuse!

Grading:

	Points	Total
Aktiv Assignments (15)	5	75
Quizzes (best 7 of 9)	25	175
In-Class Exams (4)	75	300
Laboratory	250	250
Final Exam	200	200
Course Points		1000

Students with a C average or lower will receive a Mid-Semester Deficiency Report.

****A course grade of C or better in CHEM 112 is required to enroll in most upper-level CHEM courses. Please check requirements for other science majors.****

Grades will be determined on the following point scale.

Points accumulated	Letter Grade	Points accumulated	Letter Grade
≥ 930 points	A	769 – 730 points	C
929 – 900 points	A-	729 – 700 points	C-
899 – 870 points	B+	699 – 650 points	D+
869 – 830 points	B	649 – 600 points	D
829 – 800 points	B-	below 600 points	F
799 – 770 points	C+		

Aktiv Chemistry:

Aktiv is an adaptive, independent learning platform. You will use Aktiv in this course for “weekly” graded homework assignments. Aktiv will help you to

- Review topics and skills that need refreshing
- Practice new material that you are ready to learn
- Review and prepare for exams
- Track your personal performance

There will be “weekly” assignments worth 5 points each due as indicated on the course calendar below by 11:59 pm or as announced in class.

Quizzes: A total of nine quizzes will be given throughout the term. Quiz questions will be similar to problems in the text or come from the assigned reading or lecture material. The lowest **two** quiz grades will be dropped. **There will be no make-up quizzes without prior arrangements with me.**

Exams: There will be four exams during the semester which will emphasize material introduced since the last exam. You must complete the exam during the designated class period, so be sure to make note of these dates from the course schedule. **There will be no make-up exams without prior arrangements with me.**

The final exam will be comprehensive and must be taken at the time scheduled by the University: **Wednesday December 11, Noon - 2:30 pm**. According to University policy, any student who does not take the final exam will fail the course.

Quiz and Exam Policies: No cell phones or other personal electronic communication devices may be used in the completion of quizzes or exams. *Unless explicitly otherwise noted, all quizzes and exams are closed note, closed book, closed internet, closed mouth (meaning no personal communication of any type to anyone either in the course or not). * You may only use approved non-graphing calculators for **ALL** quizzes and examinations.

If you feel a mistake has been made in the grading of your exam, you must submit what you wish to be re-graded and why (your reasoning is critical). This must be turned in to me no later than one week after the graded exam is returned. Please note that the *entire* exam will be re-graded, and the new score (higher or lower) will be recorded.

If you feel there has been a numerical error in calculating your quiz or exam score, please bring this to my attention no later than one week after the graded assignment is returned.

Laboratory: Detailed information regarding the laboratory component of this course can be found in the Lab Coursepack. It is important to note that due to the hands-on nature of the laboratory, ***if a student misses three (3) lab periods, they will fail the course.***

A laboratory practical will be given as the last lab; **any student who does not take the laboratory practical will fail the course.**

Work in the laboratory may require a team effort to gather data, but all calculations and questions must be completed independently and pledged as such. You are responsible for your own lab reports. Be sure you can personally justify anything you turn in. All sources used in the completion of lab reports must be appropriately cited and referenced.

Attendance: **Attendance in lab is mandatory.** Attendance in lecture is highly recommended. Regardless of attendance, all assignments are due on the scheduled date. ***No late assignments will be accepted without my prior consent.***

Absences: You should notify me of an expected absence as early as possible. Make-up exams will not be given except in the event of **EXTREMELY** extenuating circumstances. If you must miss a quiz, see me as soon as possible **PRIOR** to the quiz to arrange a time for a make-up quiz. Team assignments cannot be made up. If you must miss a lab, a make-up session may be possible; please see me as soon as possible **PRIOR** to the lab you will need to miss in order to make these arrangements.

Reading: Reading of the appropriate sections of the textbook should be done *before* coming to class. You are responsible for this material, *even if it is not covered in lecture*.

PASS 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. While attendance is free and voluntary, you may earn two extra credit points a week for attending a PASS session. You must be present and engaged for the entire PASS session to get credit for that session; students who are disruptive will not earn extra credit points. A maximum of two points per week is possible even if attending both PASS and peer tutoring (see below).

**Basic:
Needs
Security**

Learning effectively and engaging wholly in class is dependent upon our basic security and having our fundamental needs met: having a safe place to sleep at night, regular access to nutritious food, and some assurance of safety. If you have difficulty affording groceries or accessing sufficient food to eat every day, or if you lack a safe and stable place to live, please contact Chris Porter, Assistant Dean of Students, at cjporter@umw.edu. Additionally, the Gwen Hale Resource Center is a free resource on campus, providing food, toiletries and clothing to any member of our community. It is open Monday, Tuesday and Friday from 1pm-6pm, on the 5th floor (floor A for Attic) of Lee Hall, or resource@umw.edu. Finally, you are always welcome to talk with me about needs, if you are comfortable doing so. This will enable me to provide any resources I may possess.

Disability Resources: The Office of Disability Resources has been designated by the university as the primary office to guide, counsel, and assist students with disabilities. If you receive services through the Office of Disability Resources and require accommodations for this class, please provide me a copy of your accommodation letter via email or during a meeting. I encourage you to follow-up with me about your accommodations and needs within this class. I will hold any information you share with me in the strictest confidence unless you give me permission to do otherwise.

If you have not made contact with the Office of Disability Resources and have reasonable accommodation needs, their office is located in Seacobeck 005, phone number is (540) 654-1266 and email is odr@umw.edu. The office will require appropriate documentation of disability."

If you have allergies to any chemicals or other emergency medical information, please notify me as soon as possible.

HOW TO SUCCEED IN CHEM 112:

Success in chemistry requires considerable work on your part. Successful students typically spend a minimum of 1 hour per day on chemistry. This time is devoted to reviewing notes, attempting the suggested/assigned problems and reading ahead for the next lecture. Some of their "secrets" include (but are not limited to):

DO PROBLEMS EVERY DAY! Seriously, do problems every day!

- Attend ALL lectures.
- Take good notes.
- Ask questions. (The only "stupid" question is the one that goes unasked.)
- Solve the suggested problems for each chapter. (Attempting extra problems is also a great idea. As in all aspects of life, "practice makes perfect".)
- Consult your peers when you are struggling with the solution to a suggested problem. (First, they may approach the problem differently. Second, scientists typically work in teams. Each member of the team is responsible for a particular aspect of the problem; therefore, each scientist must understand what each of the other members of the team does and have requisite background knowledge.)
- Enlist the aid of the instructor (office hours or appointments, before or after class).
- Review the appropriate sections of the text and all notes after class.
- Attempt all suggested and assigned problems by yourself.
- Review topics from prerequisite courses.
- Attend PASS sessions regularly.
- Review the appropriate sections of the text before class.
- Review the appropriate sections of the text after class and organize your notes.

Title IX Statement

University of Mary Washington faculty are 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. ***While you may talk to me, understand that as a "Responsible Employee" of the University, I MUST report to UMW's Title IX Coordinator what you share.*** If you wish to speak to someone confidentially, please contact the confidential resources found below. They can connect you with support services and help you explore your options. You may also seek assistance from UMW's Title IX Coordinator, their contact information can be found below. Please visit <http://diversity.umw.edu/title-ix/> to view UMW's Policy on Sexual and Gender Based Harassment and Other Forms of Interpersonal Violence and to find further information on support and resources.

Ruth Davison, Ph.D.
Title IX Coordinator
Lee Hall, Room 401
1301 College Avenue
Fredericksburg, VA 22401
Phone: 540-654-5656
E-mail: rdavison@umw.edu
Website: <http://diversity.umw.edu/title-ix/>

Confidential Resources

On-Campus
Talley Center for Counseling Services
Lee Hall, Room 106, 540-654-1053

Student Health Center
Lee Hall, Room 112, 540-654-1040

Off-Campus

Empowerhouse
24-hr hotline: 540-373-9373

Rappahannock Council Against Sexual Assault (RCASA)
24-hr hotline: 540-371-1666

AI is not permitted in any capacity

AI is not permitted on any assignments or deliverables in this course. Use of AI on any submitted work will be considered a violation of course policy and as such, the student may be referred to the UMW Honor Council for a violation of academic integrity.

Academic Services Peer Tutoring

In addition to attending PASS, if working with peer tutors in the Office of Academic Services for 30 minutes you may earn two extra credit points per week. In order to earn this extra credit a student MUST email me at least once during the semester saying that they have attended Peer Tutoring. Appointments for peer tutoring can be made through the [Academic Services Peer Tutoring Website](#). A maximum of two points per week is possible even if attending both PASS and peer tutoring.

Policy on Recording Class and Distribution of Course Materials

Video and/or audio recording of class lectures and review sessions without the advance consent of the instructor is prohibited. On request, the instructor may grant permission for students to record course lectures, on the condition that these recordings are only used as a study aid by the individual making the recording. Unless explicit permission is obtained from the instructor, recordings of lectures and review sessions may not be modified and must not be transferred or transmitted to any other person, whether or not that individual is enrolled in the course. Students with approved accommodations from the Office of Disability Resources permitting the recording of class meetings must present the accommodation letter to the instructor in advance of any recording being done. On any days when classes will be recorded, the instructor will notify all students in advance. Distribution or sale of class recordings is prohibited without the written permission of the instructor and other students who are recorded. Distribution without permission is a violation of educational law. This policy is consistent with UMW's Policy on Recording Class and Distribution of Course Materials.

Distribution or sale of any and all class materials (any document or other item provided by or made available by the instructor to students enrolled, including but not limited to coursepacks, lecture videos, annotated lectures, handouts, laboratory experiments, quizzes, exams, review sheets or past exams) provided for this course (in the coursepack, during class or lab, or posted on Canvas or YouTube) is prohibited without the written permission of the instructor.

****Students in violation of any part of this policy are subject to disciplinary action through the Office of Judicial Affairs and Community Standards.****

This policy is consistent with UMW's Policy on Recording Class and Distribution of Course Materials.

Course Schedule: Lectures will adhere to this schedule as closely as possible. The quiz and exam dates are set, unless circumstances dictate otherwise.

	<u>Date</u>	<u>Topic</u>	<u>Chapter</u>	<u>Assignment</u>
Mon	Aug. 26	Chemical Kinetics	12	
Wed	Aug. 28	Chemical Kinetics	12	
Fri	Aug. 30	Chemical Kinetics AKTIV #1 due 8/31	12	QUIZ 1
Mon	Sept. 2	Labor Day – NO CLASS	-	
Wed	Sept. 4	Chemical Kinetics	12	AKTIV #2 due
Fri	Sept. 6	Kinetics/Fundamental Equilibrium Concepts	12/13	QUIZ 2
Mon	Sept. 9	Fundamental Equilibrium Concepts	13	AKTIV #3 due
Wed	Sept. 11	Fundamental Equilibrium Concepts	13	
Fri	Sept. 13	EXAM 1 AKTIV #4 due 9/14	12, 13	EXAM 1
Mon	Sept. 16	Acid-Base Equilibria	14	
Wed	Sept. 18	Acid-Base Equilibria	14	
Fri	Sept. 20	Acid-Base Equilibria AKTIV #5 due 9/21	14	QUIZ 3
Mon	Sept. 23	Acid-Base Equilibria	14	
Wed	Sept. 25	Acid-Base Equilibria	14	
Fri	Sept. 27	Acid-Base Equilibria AKTIV #6 due 9/28	14	QUIZ 4
Mon	Sept. 30	Acid-Base Equilibria	14	
Wed	Oct. 2	Acid-Base Equilibria	14.7	
Fri	Oct. 4	EXAM 2 AKTIV #7 due 10/5	14 (not 14.7)	EXAM 2
Mon	Oct. 7	Acid-Base Equilibria	14.7	
Wed	Oct. 9	Equilibria of Other Reaction Classes	15	
Fri	Oct. 11	Equilibria of Other Reaction Classes AKTIV #8 due 10/12	15	
Mon	Oct. 14	Fall Break, NO CLASS	-	
Wed	Oct. 16	Equilibria of Other Reaction Classes	15	
Fri	Oct. 18	Solutions and Colloids AKTIV #9 due 10/19	11	QUIZ 5
Mon	Oct. 21	Solutions and Colloids	11	
Wed	Oct. 23	Solutions and Colloids	11	
Fri	Oct. 25	Solutions and Colloids	11	
Mon	Oct. 28	EXAM 3 AKTIV #10 due 10/29	14.7, 15, 11	EXAM 3
Wed	Oct. 30	Thermodynamics	16	
Fri	Nov. 1	Thermodynamics	16	
Mon	Nov. 4	Thermodynamics AKTIV #11 due 11/5	16	QUIZ 6
Wed	Nov. 6	Thermodynamics	16	
Fri	Nov. 8	Electrochemistry	17	
Mon	Nov. 11	Electrochemistry AKTIV #12 due 11/12	17	QUIZ 7
Wed	Nov. 13	Electrochemistry	17	
Fri	Nov. 15	Electrochemistry	17	
Mon	Nov. 18	Electrochemistry AKTIV #13 due 11/19	17	QUIZ 8
Wed	Nov. 20	Electrochemistry	17	
Fri	Nov. 22	EXAM 4	16,17	EXAM 4
Mon	Nov. 25	Electrochemistry AKTIV #14 due 12/1	17	Not on Exam 4
Wed	Nov. 27	Thanksgiving Break, NO CLASS	-	
Fri	Nov. 29	Thanksgiving Break, NO CLASS	-	
Mon	Dec. 2	Nuclear Chemistry	21	
Wed	Dec. 4	Nuclear Chemistry	21	QUIZ 9
Fri	Dec. 6	Final Exam Review AKTIV #15 due 12/7	-	
Wed	Dec. 11	FINAL EXAM: Noon-2:30pm	11-17, 21	EXAM

Chem 112 Lab Schedule – Tentative Schedule Below

	Lab	Assignments Due
8/28	Safety, Policies Volumetric Measurements	Bring lab coat, lab notebook and safety goggles
9/4	Kinetics	Volumetric Measurements Report Due Kinetics Pre-Lab Notebook
9/11	Equilibrium	Kinetics Report Due Equilibrium Pre-Lab Notebook
9/18	Titrations	Equilibrium Report Due Titrations Pre-Lab Notebook
9/25	Determination of K_b	Titrations Report Due Determination of K_b Pre-Lab Notebook
10/2	Skills Lab #1	Determination of K_b Report Due Skills Lab Assignment Due
10/9	Titration Curves	Titration Curves Assignment Due
10/16	TBD	
10/23	Skills Lab #2	Skills Lab Assignment Due
10/30	Determination of K_{sp}	Determination of K_{sp} Pre-Lab Notebook
11/6	TBD	Determination of K_{sp} Report Due
11/13	Colligative Properties	Colligative Properties Pre-Lab Notebook
11/20	Redox	Redox Pre-Lab Notebook Colligative Properties Report Due
11/27	No Lab	Thanksgiving Break <u>Redox Report Due in Class on December 2</u>
12/4	Lab Practical and Checkout	Lab Practical

Last day to drop a course without a grade of W: September 13

Last day to withdraw from a course without a grade of F: November 1

Last day to change to pass/fail grading: November 1