University of Mary Washington
Department of Chemistry

CHEM 111: General Chemistry I
Spring 2025
Sections 1 & 2

Instructor: Dr. Randall D. Reif
Jepson 435A; rreif@umw.edu ; x5983

Office Hours:

Monday	2:30-4:00 PM
Tuesday	3:00-4:00 PM
Thursday	3:30-4:30 PM
Friday	9:30-11:00 AM

Other times by appointment.
I also have an open door policy-drop by anytime my door is open!

Class Times:

Lecture:	M, W, F	1:00 PM – 1:50 PM	Jepson 225
Lab Section 1:	R	9:30 AM – 12:15 PM	Jepson 210
Lab Section 2:	R	12:30 PM – 3:15 PM	Jepson 210

Required Course Materials:

1.) Openstax: Chemistry, 2nd edition. Its free! (https://openstax.org/books/chemistry-2e/pages/1-introduction)
2.) Subscription to Aktiv Chemistry (Class Code: **8YH7VX**) You can buy access at the bookstore or directly through the website
3.) Lab Notebook with carbonless duplicate pages
4.) Laboratory goggles and lab coat
5.) Calculator with scientific notation and exponential functions; you will only be able to use non-graphing calculators on all quizzes and exams. The TI-30X series calculators are recommended (available at the book store), but you can also use the department's Casio FX260 calculators.
6.) Access to Canvas: This course will make use of the Canvas Course management system. Please check here frequently as materials posted will include course announcements, assignments, videos, problem sets, and other course materials as necessary (ie. Lab CoursePack for Section 1&2)
7.) Access to Zoom: This course will make use of Zoom for video conferencing during class times if it is necessary to move to remote instruction.

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
- Be able to report and display data collected, interpret experimental observations and construct explanatory scientific hypotheses

- Be able to use theories and models as unifying principles that help us understand the natural world
- Students will be able to identify how the natural sciences are used to address real-world problems

Chemistry is everywhere, whether you realize it or not; it can be exciting, useful, or dangerous. After completing the General Chemistry I course, a student should

- Understand the basis for chemical bonding and reactivity
- Be able to solve problems related to chemical principles
- Understand the models used by scientists to explain observed phenomena
- Have gained hands-on experience in the lab and learned how to conduct scientific experiments

Grading

The grade in the course will be based on the number of points accrued throughout the semester. Each assignment is worth a specific percentage of the final grade, shown below. The dates for the assignments will be announced in class or are listed on the tentative schedule.

Grade component	**Total %**
In-Class examinations (4) – 7.5% each	30%
Quizzes and Assignments	15%
Aktiv Online Homework	10%
Laboratory	25%
Participation (In-class, Zoom, etc.)	5%
Cumulative Final Examination	15%
Total possible	100%

The final course grade will be based on the following point scale:

Points accrued	**Letter grade**	**Points accrued**	**Letter grade**
≥ 93 %	A	76.9-73.0 %	C
92.9-90.0 %	A-	72.9-70.0 %	C-
89.9-87.0 %	B+	69.9-67.0 %	D+
86.9-83.0 %	B	66.9-60.0 %	D
82.9-80.0 %	B-	≤ 59.9 %	F
79.9-77.0 %	C+		

A mid-semester report of unsatisfactory (U) will be reported if you have a C or below in the course thus far.

A course grade of C or better in CHEM 112 will be required to enroll in most upper level chemistry courses.

Quizzes

The intent of the **quizzes** is to help keep you up to date with the material, prepare you for the examinations, and help the instructor identify if the class understands the concepts presented in the lecture. Quizzes can be announced or unannounced and will be similar to problems in the text or come from the assigned reading or lecture material. There will be no make-up quizzes without prior arrangements with me.

Exams

There will be four in-class exams during the semester which will emphasize material introduced since the last exam. There will be no make-up exams without prior arrangements with me.

The 50-minute examinations will be given in-class on the dates indicated. **You may begin the examinations at 1:00 pm and the exam must be completed by 1:55 pm on that date**.

The Final Exam will be a comprehensive and must be taken at the time scheduled by the University: May 2, 2025 at 12:00 – 2:30 PM. **According to University policy, any student who does not take the final exam will fail the course.**

No cellular phones, PDAs, or other personal devices will be permitted during an examination. You may only use non-graphing calculators for ALL quizzes and examinations.

Make-up exams will only be arranged for exceedingly unavoidable circumstances that are documented (death in family, hospitalization, etc.). Convenient travel arrangements *do not qualify*. You need to notify me immediately of such an emergency. ***Make-up exams will not be given after corrected exams are handed back to the rest of the class.***

If you feel that a mistake has been made in the grading of your exam, you must bring the exam to me no later than one week after the graded exam is returned.

Homework (Aktiv)

Aktiv Chemistry is an online, homework and learning system that provides an efficient, effective, and engaging learning experience. The best part of this system is that it was designed for use with smartphones and tablets SO this homework can be done from anywhere, not just a computer.

Each week, you will be responsible for completing a homework that contains topics that have been covered in lecture. Performance on these homework assignments will determine your score. Generally, you must complete 8/10 problems on the homework to earn credit.

The points earned for a homework assignment are assigned as follows:

# of points earned in Aktiv	Points out of 10
≥ 8	10
6 - 7	8
4 - 5	6
2 – 3	4
≤ 1	0

Laboratory

Detailed information regarding the laboratory component of this course can be found in the lab coursepack in print in the bookstore or posted on Canvas. 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 the last week of lab; any student who does not take the laboratory practical will fail the course.

Group work in the laboratory may require team effort to gather data, but ***all calculations and questions should be completed independently***. You are responsible for your own lab reports. Be sure you can personally justify anything you turn in.

Attendance and Participation

Attendance in the lab is MANDATORY. Attendance in lecture is optional, HOWEVER, **students will only receive participation credit for attending class and participating in in-class activities.** Occasionally, material will be presented in lecture that is beyond the scope of your textbook or with a different emphasis than that of the text, and you will be responsible for learning this material even if you are absent.

Regardless of attendance, all assignments are due on the scheduled date. **No late assignments will be accepted without my prior consent.**

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 lab because of an excused absence, a make-up session is usually possible if you can attend one of the other lab sections in the same week as your missed lab.

Role of the Textbook

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

Canvas

You must have access to Canvas (https://canvas.umw.edu). Frequently, pertinent articles will be handed out in class or posted on Canvas and the contents thereof will be

included in the required information for quizzes and exams. Assignments, announcements and other information will also be posted on Canvas for reference.

File Uploads to Canvas: Many times throughout the semester you will be required to upload files into Canvas. **Please note that the ONLY file type you should EVER upload are .pdf**. A recommended way to upload images is to paste them into a word document in sequence, **save the document as .pdf and then upload the file**. There are many other ways to do this, but canvas works most reliably with pdf files types.

Honor System

Any assignment for which you will receive a grade must be completed and pledged as your own work. The honor pledge must be written in full: I *hereby declare upon my word of honor that I have neither given nor received unauthorized help on this work. (Signature)*. I will not grade an assignment without a signed pledge.

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

PASS Sessions and Peer Tutoring

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 0.2% points a week (up to 2% total for the semester) for attending a PASS session; students who are disruptive will not earn extra credit points. Attendance will be recorded.

In addition to attending pass, working with Peer tutors in the Office of Academic Services for 30 minutes will also earn 0.2% points (this will contribute to the max 2% total). Appointments for peer tutoring can be made through the Academic Services Peer Tutoring Website.

Family Educational Rights and Privacy Act (FERPA)

FERPA is a Federal law that protects student educational records. It is a violation of this law to put a stack of graded papers at the front of the classroom for students to retrieve. There is a chance that another student could see a grade on the assignment. To retain confidentiality, the grade on assignments will be placed on a back page. If you do not feel comfortable having your papers placed on a table at the front of the classroom, you can pick your papers up in person at my office. Please indicate on the waiver, your choice of manner to obtain assignments.

Office of Disability Services

The Office of Disability Services has been designated by the University as the primary office to guide, counsel, and assist students with disabilities. If you receive services through that office and require accommodations for this class, please make an appointment with me as soon as possible to discuss your approved accommodation needs. Bring your accommodation letter with you to the appointment. I will hold any information you share with me in the strictest confidence unless you give me permission to do otherwise. If you need accommodations, (note taking assistance, extended time for tests, etc.), I would be happy to refer you to the Office of Disability Services. They will require appropriate documentation of a disability. Their phone number is 540-654-1266.

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

Course Recording Policy

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student's own private use. Students who wish to record lectures or class activities for study purposes must inform the faculty member first. 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 privacy law. This policy is consistent with UMW's Policy on Recording Class and Distribution of Course Materials.

Title IX

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 below confidential resources. They can connect you with support services and help you explore your options. You may also seek assistance from UMW's Title IX Coordinator. 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 106, 540-654-1053

Student Health Center
Lee Hall 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

A.I. Use Statement

AI is permitted in a limited capacity in this course. Students should refer to individual assignments for details as well as how/when appropriate citation for the tool should be used.

Although AI use is permitted in this course, you should keep the following points in mind:

1.) AI is a continuously developing tool. Keep track of how you use AI (e.g., original and revised prompts, where in your thinking process you used AI, different output over time). An electronic file with screenshots and notes or a written journal of your process documents your workflow and, as needed, supports appropriate attribution and citation.
2.) Fact check all AI output. AI tools are built on systems and inputs with acknowledged biases. Early and current AI output has produced factual errors and the tools 'hallucinate' or fabricate information. This is especially true if the AI is prompted about something for which it has little or no information. Unless you know the answer with 100% certainty, check responses with trusted sources.
3.) AI is only as good as the prompts it receives. It may take practice and time to use AI for results meeting expectations and standards. As a result, AI may not be the best or easiest route for completing a task.
4.) Different professors treat the use of AI tools differently. Double-check with individual professors if you are unsure about whether AI use is appropriate for a specific assignment.

Community Values Statement (COVID-19)

All students are expected to adhere to the policies and expectations of the University to mitigate risk and support the health and safety of the UMW community. A comprehensive set of the current policies and expectations can be found at the COVID-19 information page.

Failure to comply with UMW policies and expectations regarding COVID-19 risk mitigation will result in disciplinary action consistent with the Student Code of Conduct.

How to Succeed in CHEM 111

- **DO PROBLEMS EVERY DAY!**
- Spend about one hour per day on chemistry (reading, reviewing notes, doing problems)
- Attend lecture regularly, sit near the front, and take careful notes
- Watch any posted Videos and take active NOTES!
- 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
- Do the practice problems alone and in groups
- Come to review sessions prepared with questions
- Seek the instructor's help when needed (office hours, before/after class, email)
- In the event that you require additional help beyond the instructor, you are highly advised to seek peer-tutoring through Academic Services

Tentative Course Schedule **Spring 2025**

The modules in Canvas will as closely as possible adhere to this schedule. The quiz and exam dates are set. If all of the "scheduled" material has not been covered prior to the quiz/exam, the quiz/exam will include only what has been covered.

Date	Topic	Chapter	Assignment
Jan. 13	Intro; Matter, Measurement, and Problem Solving	1	
Jan. 15	Matter, Measurement, and Problem Solving	1	
Jan. 17	Atoms, Molecules, and Ions	2	**H1, Q1**
Jan. 20	**MLK Jr. DAY – No class**		
Jan. 22	Atoms, Molecules, and Ions	2	
Jan. 24	Composition of Substances, Stoichiometry of Chemical Reactions	3.1-2, 4.1-4	**H2, Q2**
Jan. 27	Composition of Substances, Stoichiometry of Chemical Reactions	3.1-2, 4.1-4	
Jan. 29	Composition of Substances, Stoichiometry of Chemical Reactions	3.1-2, 4.1-4	
Jan. 31	Composition of Substances, Stoichiometry of Chemical Reactions	3.1-2, 4.1-4	**H3, Q3**
Feb. 3	Composition of Substances, Stoichiometry of Chemical Reactions	3.3-4, 4.5	
Feb. 5	Composition of Substances, Stoichiometry of Chemical Reactions	3.3-4, 4.5	
Feb. 7	**EXAM 1**	1, 2, 3, 4	**H4, EXAM**
Feb. 10	Composition of Substances, Stoichiometry of Chemical Reactions	3.3-4, 4.5	
Feb. 12	Composition of Substances, Stoichiometry of Chemical Reactions	3.3-4, 4.5	
Feb. 14	Composition of Substances, Stoichiometry of Chemical Reactions	3.3-4, 4.5	**H5, Q4**
Feb. 17	Thermochemistry	5	
Feb. 19	Thermochemistry	5	
Feb. 21	Thermochemistry	5	**H6, Q5**
Feb. 24	Thermochemistry	5	
Feb. 26	Electronic Structure and Periodic Properties of Elements	6	
Feb. 28	**EXAM 2**	3.3-4, 4.5, 5	**H7, EXAM**
Mar. 3-7	**SPRING BREAK! – No class**	-	
Mar. 10	Electronic Structure and Periodic Properties of Elements	6	
Mar. 12	Electronic Structure and Periodic Properties of Elements	6	
Mar. 14	Electronic Structure and Periodic Properties of Elements	6	**H8, Q6**
Mar. 17	Electronic Structure and Periodic Properties of Elements	6	
Mar. 19	Chemical Bonding and Molecular Geometry	7	
Mar. 21	Chemical Bonding and Molecular Geometry	7	**H9, Q7**
Mar. 24	Chemical Bonding and Molecular Geometry	7	
Mar. 26	Chemical Bonding and Molecular Geometry	7	
Mar. 28	Advanced Theories of Covalent Bonding	8	**H10, Q8**
Mar. 31	Advanced Theories of Covalent Bonding	8	
Apr. 2	Advanced Theories of Covalent Bonding	8	
Apr. 4	Advanced Theories of Covalent Bonding	8	**H11, Q9**
Apr. 7	Gases	9	
Apr. 9	Gases	9	
Apr. 11	**EXAM 3**	6-8	**H12, EXAM**
Apr. 14	Gases	9	
Apr. 16	Liquids and Solids	10	
Apr. 18	Liquids and Solids	10	**H13, Q10**
Apr. 21	Liquids and Solids	10	
Apr. 23	**EXAM 4**	9, 10	**EXAM**
Apr. 25	Review	1-10	**H14**
May 2	**FINAL EXAM Noon-2:30 PM**	1-10	**FINAL**

CHEM 111 Lab Schedule

	Lab	Assignments Due
1/16	Introduction, Lab Policies, and Safety	
1/23	Volumetric Measurements	Volumetric Measurement Pre-Lab Notebook
1/30	Skill Lab 1	Volumetric Measurements Report Skills Assignment
2/6	Solution Preparation	Solution Preparation Pre-Lab Notebook
2/13	Stoichiometry (Cobalt Complex)	Solution Prep Report Stoichiometry Pre-Lab Notebook
2/20	Skills Lab 2	Stoichiometry Report Skills Assignment
2/27	Thermochemistry (Specific Heats)	Thermochemistry Pre-Lab Notebook
3/6	NO LAB	Spring Break
3/13	Spectroscopy	Thermochemistry Report Spectroscopy Pre-Lab Notebook
3/20	Skills Lab 3	Spectroscopy Report Skills Assignment
3/27	TBD	
4/3	Lewis Structures & Molecular Geometry	Lewis Structures & Molecular Geometry Assignment
4/10	Reaction of Metal with Acid	Reaction of Metal with Acid Pre-Lab Notebook
4/17	TBD	** Reaction of Metal with Acid Report Due 4/17**
4/24	Lab Practical	Lab Practical

Last day to drop a course: January 31

Last day to withdraw from a course or change to pass/fail grading: March 21