University of Mary Washington

Department of Chemistry

CHEM 112: General Chemistry II

Spring 2020

Section 3 & 4

Instructor: Dr. Randall D. Reif

Jepson 435A; rreif@umw.edu ; x5983

Office Hours:

Monday	2:00-4:00 PM
Thursday	1:30-3:30 PM
Friday	2:00-3:00 PM

Other times by appointment.

I also have an open door policy-drop by anytime my door is open!

Class Times:

Lecture:	M, W, F	9:00 – 9:50 AM	Jepson 229
Lab:	Section 3, W	2:00 – 4:50 PM	Jepson 214
	Section 4, R	9:30 AM – 12:15 PM	Jepson 214

Required Course Materials:

1.) Principles of Chemistry: A Molecular Approach, 3rd ed., Tro
2.) Subscription to ALEKS (Class Code: RLE49-MAH4C)
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, and other course materials as necessary (ie. Lab CoursePack for Sections 3&4)

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 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

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	15%
ALEKS Pie Completion	5%
ALEKS Objective Completion	5%
Laboratory	25%
Cumulative Final Examination	20%
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 9:00 am and the exams are due at 9:50 am**. If you arrive late for an examination, you will have less time to complete the exam.

The Final Exam will be a comprehensive, standardized final prepared by the American Chemical Society and must be taken at the time scheduled by the University: April 27, 2020 at 8:30 – 11:00 AM. 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 (ALEKS)

ALEKS (Assessment and LEarning in Knowledge Spaces) is an online, mastery-based assessment and learning system that provides an efficient, effective, and engaging learning experience. ALEKS uses artificial intelligence to determine precisely what you know, don't know, and are most ready to learn. This begins with an Initial Knowledge Check, which is a 25-30 question adaptive assessment that determines which course topics you have already mastered and which you have not. This knowledge is depicted in a pie chart divided into different areas of the course which will be filled in as you master topics.

Each week, you will be responsible for completing an objective that contains topics that have been covered in lecture. Performance on these objectives will determine your score on Objective Completion (5% of grade). Generally, you must complete 80% of the Objective to earn credit. By the end of the semester, the goal is to have the entire pie chart filled in with topics you have mastered; performance on this will determine your score on Pie Completion (5% of grade).

Laboratory

Detailed information regarding the laboratory component of this course can be found in the lab coursepack 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 students 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

Attendance in the lab is MANDATORY. Attendance in lecture is highly recommended. 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 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.

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

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.

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 would like to retrieve your paper from the classroom, please sign and date the provided waiver form. 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.

Resources

-Stefanie Lucas-Waverly
Title IX Coordinator
540-654-5656
slucaswa@umw.edu

-Crystal Rawls
Title IX Deputy for Students
Area Coordinator
540-654-1801
crawls@umw.edu

Confidential Resources

-Talley Center for Counselling Services
LeeHall 106

-Student Health Center
Lee Hall 112

-Empowerhouse
540-373-9373

-RCASA
540-371-1666

How to Succeed in CHEM 112

- **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
- 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 2020**

The tentative schedule that follows is how I see the course progressing. It is not set in stone; if there is material that is confusing to the class, we will spend more time on it. The quiz and exam dates will remain as scheduled. If all of the "scheduled" material has not been presented prior to the quiz/exam, the quiz/exam will include only what has been covered.

Date	Topic	Chapter	Assignment
Jan. 13	Chemical Kinetics	13	
Jan. 15	Chemical Kinetics	13	
Jan. 17	Chemical Kinetics	13	A1, Q1
Jan. 20	MLK, Jr. Day – NO CLASS	-	A2
Jan. 22	Chemical Kinetics	13	
Jan. 24	Kinetics/Chemical Equilibrium	13/14	A3, Q2
Jan. 27	Chemical Equilibrium	14	
Jan. 29	Chemical Equilibrium	15	
Jan. 31	EXAM 1	13, 14	A4, EXAM
Feb. 3	Acids and Bases	15	
Feb. 5	Acids and Bases	15	
Feb. 7	Acids and Bases	15	A5, Q3
Feb. 10	Acids and Bases	16	
Feb. 12	Aqueous Ionic Equilibrium	16	
Feb. 14	Aqueous Ionic Equilibrium	16	A6, Q4
Feb. 17	Aqueous Ionic Equilibrium	16	
Feb. 19	Aqueous Ionic Equilibrium	12	
Feb. 21	EXAM 2	15, 16	A7, EXAM
Feb. 24	Solutions	12	
Feb. 26	Solutions	12	
Feb. 28	Solutions	12	A8, Q5
Mar. 2	Spring Break, NO CLASS	-	
Mar. 4	Spring Break, NO CLASS	-	
Mar. 6	Spring Break, NO CLASS	-	
Mar. 9	Solutions	12	
Mar. 11	Aqueous Ionic Equilibrium	16	
Mar. 13	Aqueous Ionic Equilibrium	16	A9, Q6
Mar. 16	Aqueous Ionic Equilibrium	16	
Mar. 18	Aqueous Ionic Equilibrium	16	
Mar. 20	EXAM 3	12, 16	A10, EXAM
Mar. 23	Free Energy and Thermodynamics	17	
Mar. 25	Free Energy and Thermodynamics	17	
Mar. 27	Free Energy and Thermodynamics	17	A11, Q7
Mar. 30	Free Energy and Thermodynamics	18	
Apr. 1	Electrochemistry	18	
Apr. 3	Electrochemistry	18	A12, Q8
Apr. 6	Electrochemistry	18	
Apr. 8	Electrochemistry	18	
Apr. 10	Electrochemistry	18	A13, Q9
Apr. 13	Electrochemistry	18	
Apr. 15	Electrochemistry	18	
Apr. 17	EXAM 4	17, 18	A14, EXAM
Apr. 20	Radioactivity and Nuclear Chemistry	19	
Apr. 22	Radioactivity and Nuclear Chemistry	19	Q10
Apr. 24	Research and Creativity Day	-	A15
Apr. 27	FINAL EXAM: 8:30-11:00am	12-19	PIE, EXAM

CHEM 112 Lab Schedule

	Lab	Assignments Due
1/15-16	Safety, Lab Check-in, Volumetric Measurements	-
1/22-23	Kinetics	Volumetric Measurements Report Kinetics Pre-Lab Notebook
1/29-30	Equilibrium	Kinetics Report Equilibrium Pre-Lab Notebook
2/5-6	Titrations	Equilibrium Report Titrations Pre-Lab Notebook
2/12-13	K_a Determination	Titrations Report K_a Determination Pre-Lab Notebook
2/19-20	Project 1	Ka Determination Lab Notebook Pages
2/26-27	Mystery Fun Lab	Project 1 Lab Report
3/5-6	SPRING BREAK	
3/12-13	Colligative Properties	Colligative Properties Pre-Lab Notebook
3/19-20	Ksp Determination	Colligative Properties Report Ksp Pre-lab Notebook
3/26-27	Titration Curves	Ksp Report Lab Notebook Pages
4/2-3	Project 2	Lab Notebook Pages
4/9-10	Oxidation States	Project 2 Lab Report Oxidation States Pre-lab Notebook
4/16-17	Unidentified Fun Lab	Oxidation States Report
4/25-26	**Laboratory Practical,** Check-out	

Last day to drop a course: January 31st

Last day to withdraw from a course or change to pass/fail grading: March 20th

I have read and am accountable for all information in the Chemistry 112 Syllabus. I am also accountable for all information, both written and verbal, communicated in the class. I am accountable for information transmitted to me via electronic mail (e-mail) and posted on Canvas.

Signed:_____ Date:_____

FERPA Waiver

Name : _____

I give permission for graded assignments bearing my name and grade to be placed in the front of a classroom for retrieval.

Signature: _____

I do not wish to have my graded assignments placed in front of a classroom and will retrieve my papers in Dr. Reif's office.

Signature: _____