General Chemistry: Chemistry 111 Spring 2020
Section 1

Instructor:

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Lecture: MWF 2:00 – 2:50 pm; Jepson Science Center 217B

Office Hours:

MWF 10:00 – 11:00 am
MW 1:00 – 2:00 pm
or by appointment

Required Course Materials:

Text: Tro, *Principles of Chemistry: A Molecular Approach, 3rd edition*

Course Pack: CHEM 111 Section 1

ALEKS (aleks.com: online learning tool); available through the Bookstore or directly from the website

Calculator: TI-30X series or Casio FX260 with scientific notation and logarithmic/exponential functions; you will need this type of calculator for ALL examinations or an equivalent approved by the instructor. You must have a calculator of this type to work practice problems and in-class problems. You cannot succeed without practice using the same device that you will have for the exams. Cellular phones are not permitted on exam days.

Course Description, General Education and Course-Specific Learning Objectives:
General Chemistry I, in part, satisfies the Natural Science General Education requirement. As such, after completing this course, as 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. Further,
- Students will be able to identify how the natural sciences are used to address real-world problems.

General Chemistry is designed so that each student learns the fundamental concepts of chemistry. To do this successfully, problem-solving skills must be practiced and

developed. Chemists (and scientists, in general) are in the business of solving problems on a daily basis. By attending lectures faithfully and completing the suggested practice problems, each student can begin to acquire the skills necessary to become a critical thinker. (These same skills are useful in all professional areas, including business, law, medicine, etc.) After completing General Chemistry I, 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:

4 Hourly Exams at 80 points each	32%
Graded quizzes on announced Fridays at 90 points total	9%
ALEKS at 90 points (see details below)	9%
Laboratory at 250 points	25%
Cumulative Final Exam at 250 points	25%

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+		

Students with an exam and quiz average of C or less will receive a midsemester report.

A grade of C- or better in CHEM 111 is required to enroll in CHEM 112.

Extra credit will be awarded for **active** participation in PASS (see below). Students can earn 3 points per week for attendance and active involvement in a PASS session up to a total of 30 points extra credit over the entire semester.

Honor System: All graded work (hourly exams, all quizzes including ALEKS, extra credit assignments, laboratory reports, final exams) must be your own and pledged as such:

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

No late assignments will be accepted. It is recommended that the suggested problems (not ALEKS) be done individually and then as a group when questions arise. You should discuss difficulties with the suggested problems or lecture/laboratory material with me.

Class Attendance: Class attendance is highly recommended. The material discussed in lecture frequently has a different emphasis than that provided by the textbook. Also, time has been set aside in the course schedule to discuss example problems. Students are responsible for all covered material during a missed class. Missed laboratories and exams cannot be made up. Exams will be rescheduled in the event of an excused absence due to an emergency. (Immediate notification of the instructor is mandatory). Lateness to lecture is distracting, and students should attempt to be on time. (Would you come late to a job interview or a job?) Lateness to an exam will result in less time allowed for completion of the exam. Cell phones must be turned off prior to entering the classroom and are **prohibited** on examination days.

ALEKS: ALEKS (Assessment and Learning in Knowledge Spaces) is an adaptive, online learning platform from McGraw-Hill Education. You will take "quizzes" (complete learning objectives) using this platform. ALEKS will help you to

- Review topics and skills you need refreshing
- Practice new material that you are ready to learn
- Review and prepare for exams
- Track your performance and progress with personalized reports ("pie" chart)

Each week you will complete an objective covering topics from lecture. Your performance on these objectives will contribute to part of your ALEKS "grade." There are 15 scheduled objectives, each of which will be worth 3 points (due as indicated on the course calendar below by 8 am). To get the 3 points, you need to get an 85% on the objective. The dates for these objectives will not be changed. This accounts for 45 points of your ALEKS grade. The goal, by the end of the semester, is to complete the ALEKS pie chart with all of the topics you have mastered. You can earn up to 45 points for completion of the ALEKS pie by **Friday, May 1st at 8 am**. The points for the pie are assigned as follows:

Percentage of the ALEKS pie completed by the final exam day	Pie completion points
≥ 95	45 points
88 – 94	43
80 – 87	40
70 – 79	35
60 – 69	30
50 – 59	25
40 – 49	20
30 – 39	15
20 – 29	10
10 – 19	5
≤ 10	0

PASS: Extra credit in this course can be earned through attendance at Peer Assisted Study Skills sessions. These hour-long sessions are meant to bolster your study, math and/or chemistry skills. There will be several sessions held each week; for each weekly attendance (i.e., attending one of the numerous sessions in a given week), you will receive 3 points toward your final grade up to 30 points total. This amounts to attending 10 out of the 14 weeks of the semester. You will not gain the points if you only go to the PASS sessions during the first three weeks of class or the last or only before exams. Your attendance must be more regular for you to benefit. In addition, for you to receive credit (the 3 points), you must be present for the entire PASS session. Students who are disruptive will lose credit for that session; continual disruptions will result in your removal from PASS for the rest of the semester and the denial of any extra credit points associated with your attendance.

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. You will need to request appropriate accommodations through this office as soon as possible and then make an appointment with me to discuss your approved accommodation needs. I will hold any information you share with me in the strictest confidence unless you give me permission otherwise.

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.

Class Recordings: 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 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.

Other "helpful" information:

The tentative schedule that follows is how I see the course arranged. It is not set in stone. If there is material that you, as a class, find confusing, we will spend more time on that topic. The exam dates will remain set according to the schedule. If all of the "scheduled" material has not been presented prior to the exam, the exam will include only what has been covered.

Success in a chemistry course requires work on your part. Successful students typically spend approximately 1 hour per day on chemistry. They devote this time to reviewing notes, attempting the suggested problems and reading ahead for the next lecture. Some "secrets" behind their success include (but are not limited to)

- reading the material prior to class.
- attending the lectures.
- taking good notes.
- asking questions.
- solving the suggested problems for each chapter. (Attempting extra problems is also a great idea. As in all aspects of life, "practice makes perfect.")
- attending PASS sessions regularly.
- consulting your peers when you are struggling with the solution to a problem. (First, they may have a different slant or see the problem in a different light. Second, remember 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 a requisite background knowledge.)
- enlisting the aid of the instructor (office hours or appointments, before or after class).
- reviewing the appropriate sections of the text and all notes after class.
- coming prepared to review sessions with questions in hand.
- using the on-line aids provided with your book.

Course Outline:

Topic	Chapters
Fundamentals, Chemical Reactions:	Chapter 1
	Chapter 2
	Chapter 3
	Chapter 4
Energy and Atomic Structure:	Chapter 6
	Chapter 7
Chemical Bonding:	Chapter 8
	Chapter 9
	Chapter 10
Chemical Structure, States of Matter:	Chapter 5
	Chapter 11

Cumulative Final Exam: Friday, May 1st; 3:30 pm – 6 pm

General Chemistry: Spring 2020
Chemistry 111 Laboratory

Section 1: T 9:30 am – 12:15 pm.; 210 Jepson

Required Laboratory Materials:

Laboratory Package: part of the CHEM 111 coursepack

Laboratory Notebook: carbonless, duplicate laboratory notebook
Safety Goggles: available in the Bookstore
Laboratory Coat: available in the Bookstore
Scientific Calculator: see above

Course Description: The laboratory portion of this course is designed so that each student gains experience in the practical, hands-on aspects of chemistry. The laboratory has been developed in a manner that combines skill development with problem solving, critical thinking experience. The National Science Foundation and chemical industry leaders have identified an "employable quintet" of skills that the laboratory program strives to meet. The key points of this quintet are

1) in-depth technical knowledge
2) problem solving ability in a laboratory setting
3) flexibility in learning and working
4) the ability to work in teams
5) clarity in oral and written communication.

These abilities are developed by the combination of one week skill labs to provide technical development and the guided-inquiry team projects. The one week laboratories have been chosen to correspond with the lecture topics to reinforce the principles learned in class; the projects emphasize problem solving, "thinking outside of the box" and teamwork. In the projects you will work with a team of three or four students to develop an experimental procedure, carry out the experiment, record data and observations, and then report your results in a written communication.

Grading:

Projects at 200 points

One-week exercises at 100 points each

Honor System: All graded work (i.e., all laboratory assignments) except the proposals must be your own. Late assignments **will not be accepted and will result in a grade of zero**. Please, discuss difficulties with the laboratory material with me.

Class Attendance: Laboratory attendance is mandatory. Due to the hands-on, experiential nature of the laboratory, failure to attend and/or complete laboratories will result in failure in the course; more specifically, **if a student misses three (3) lab periods or more, (s)he will fail the entire course.** Essential safety and procedural information is presented at the beginning of laboratory; therefore, lateness cannot be accepted or tolerated. Repeated lateness will result in point deductions for each lab. If excessive safety information has been missed due to lateness, the student will not be permitted to conduct the experiment; this **will** count as a missed laboratory period. Missed laboratories can only be made up in the event of a legitimate emergency (excused absence) with proper notification of the instructor prior to the scheduled day and time of the lab meeting.

The proposed schedule for the lecture and laboratory is listed on the chart below.

1/13: Introduction Chapter 1	1/15: Chapter 1	1/17: Chapter 1 ALEKS 1	1/14: Lab Check-in, Safety
1/20: **MLK Day** **NO CLASS** **ALEKS 2**	1/22: Chapter 2	1/24: Chapter 2 ALEKS 3	1/21: volumetric glassware
1/27: Chapter 2	1/29: Chapter 3	1/31: Chapter 3 ALEKS 4	1/28: empirical formula
2/3: Chapter 3	2/5: Chapter 3/4	2/7: **Exam #1** ALEKS 5	2/4: solution preparation
2/10: Chapter 4	2/12: Chapter 4	2/14: Chapter 4 ALEKS 6	2/11: stoichiometry
2/17: Chapter 6	2/19: Chapter 6	2/21: Chapter 6 ALEKS 7	2/18: thermochemistry
2/24: Chapter 6	2/26: Chapter 7	2/28: **Exam #2** ALEKS 8	2/25: project 1
3/2 SPRING BREAK	3/4: SPRING BREAK	3/6: SPRING BREAK	3/3: BREAK
3/9: Chapter 7	3/11: Chapter 7	3/13: Chapter 7 ALEKS 9	3/10: heat of neutralization
3/16: Chapter 8	3/18: Chapter 8	3/20: Chapter 8 ALEKS 10	3/17: spectroscopy
3/23: Chapter 8/9	3/25: Chapter 9	3/27: Chapter 9 ALEKS 11	3/24: project 2*
3/30: Chapter 9	4/1: Chapter 10	4/3: **Exam #3** ALEKS 12	3/31: molecular structure*
4/6: Chapter 10	4/8: Chapter 5	4/10: Chapters 5 ALEKS 13	4/7: instructor's choice*
4/13: Chapter 5	4/15: Chapter 5	4/17: Chapter 11 ALEKS 14	4/14: gas laws and reaction
4/20: Chapter 11	4/22: **Exam #4** ALEKS 15	4/24: Research and Creativity Day **Quiz #11**	4/21: lab final and check-out **laboratory final**

Cumulative Final Exam: Friday, May 1st; 3:30 pm – 6 pm

***** the dates for these labs may be interchanged depending on progress in lecture.