

Instructor: Dr. R.B. Scott Jepson 336 x1409 email: rscott@umw.edu
office hours: 10:00 – 11:00 MWF ; 11:00 - 12:00 TR or by appointment

Text: Chemistry Silberberg, 6th ed.
required: laboratory goggles
lab coat
laboratory notebook (one with carbonless copy pages)

This course is the first half of a year long program intended to provide the student with a fundamental background in chemical principles. Specifically, the first semester has lays the foundation for the understanding of chemical principles by focusing on stoichiometry and bonding. Learning critical laboratory skills and sharpening the student's ability to explore scientific inquiry in the laboratory is also a fundamental component. After completing the 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

This course in part satisfies the Natural Science General Education requirement. After completing the full two 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
- Be able to identify current issues in which scientific progress may challenge traditional social ideas or present moral or ethical dilemmas

GRADING:	Laboratory	25%
	four unit Exams @ 13 % ea	52%
	online status checks	8%
	Laboratory Final	*%
	Final Exam	15%

Occasionally, there will be opportunities for bonus points. However, the maximum score awarded for any graded work will be a 100.

* THIS COURSE REQUIRES A FINAL COURSE AVERAGE OF 70 TO RECEIVE A PASSING GRADE; THIS APPLIES TO A SATISFACTORY MIDSEMESTER GRADE AS WELL.

* THIS COURSE IS EXPERIENTIAL. MISSING MORE THAN TWO LABORATORY EXPERIENCES WILL AUTOMATICALLY RESULT IN A FAILING GRADE FOR THE COURSE.

HONOR SYSTEM:

I expect the University Honor System to be upheld. This means that **any** graded work must be your own effort. Group work in the laboratory requires a team effort to gather data, but you are responsible for your own report. Be sure you can personally justify anything you turn in.

These suggested problems for each chapter are NOT formal assignments. The list is meant to give you an opportunity to practice with the important concepts in the chapter.

Unit I	Fundamentals	Exam: Friday, Sept. 16
chapter	suggested problems	
1	6, 19, 21, 30, 34, 38, 52, 54, 58, 80	
2	14, 20, 22, 26, 33, 39, 41, 49, 52, 55, 66, 74, 136	
3	2, 8, 12, 14, 18, 23, 28, 34, 38, 42, 44, 47, 54, 56, 66, 70, 78, 82, 88, 99, 109, 147	

Unit II	Solutions and Energy	Exam: Friday, Oct. 14
chapter	suggested problems	
4	2, 3, 10, 14, 16, 24, 29, 31, 33, 35, 39	
6	19, 24, 37, 41, 43, 51, 52, 65, 67, 74, 77, 100, *ch.9: 45, 47, 49	
7	2, 7, 9, 39, 47, 48, 49, 55, 59, 72	

Unit III	Electronic Structure and Bonding	Exam: Friday, Nov. 11
chapter	suggested problems	
8	6, 9, 11, 21, 23, 25, 39, 41, 53, 55, 57	
9	1, 6, 10, 12, 14, 20, 22, 24, 30, 33, 35, 56, 60, 62, 64, 86	
10	5, 7, 9, 11, 13, 15, 19, 21, 26, 34, 36, 40, 42, 44, 52, 57	
11	1, 7, 9, 11, 13, 21, 23, 26, 30, 36, 42	

Unit IV	States of Matter	Exam: Wednesday, Dec. 7
5	6, 8, 10, 20, 22, 28, 30, 39, 43, 49, 55, 65, 69, 78, 100	
12	4, 5, 13, 14, 18, 19, 21, 25, 37, 41, 47, 61, 78, 83, 86, 92	
13	4, 52, 56, 58, 60, 66, 70, 72, 74, 82, 85, 88, 92, 94, 98, 104	

Cumulative Final Exam: Monday December 12, 3:30 - 6:00 pm

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 already receive services through the Office of Disability Services and require accommodations for this class, make an appointment with me as soon as possible to discuss your approved accommodation needs. Please 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.

Examination Policy

All exams, Unit or Final, will be administered with a Blue Book. It is the student's responsibility to bring a blank blue book to the exam (**don't write on the cover**) and exchange it for one with an exam inside. No blue book, no exam. You can, however, purchase one at the time of the exam. I expect the Honor Code to be written **in full** inside the front cover of the blue book.

The semester is divided into several topical sections, each of which will have an associated examination. The exam will be constructed so that the entire class has a reasonable chance to finish it in 50 minutes. It will start at the top of the hour and I expect to have it in my possession 50 minutes later.

I will not plead with you to turn it in. I will simply announce a few minutes warning, then when the time is expired. * Secret word number one: lion At this point I will start a timer. There will be a one point deduction for every minute that you keep your work. **It is YOUR responsibility** to get your exam to me.

For those of you authorized to receive time and a half on exams: 50 minutes extends to 75 minutes. The timer will start at 15 minutes past the hour with the same consequences. I will try to be present when your exam is due, but if I am not **it is still YOUR responsibility** to turn in the exam on time. If you can't locate me, note the time on your paper and slide it under my door. (This is also covered by the Honor Code.)

If a student misses an exam due to medical or personal emergency, I will arrange for a make-up time. All of the above rules apply to the make-up, and the student can expect to get a different exam from the one taken by their classmates.

No Unit Exam scores are dropped from the overall grade consideration.

The Final Exam is cumulative, and will revisit each of the sections represented by a Unit Exam. If a student demonstrates on the Final Exam a level of mastery not indicated by the Unit Exam score, I will adjust the lowest unit score to reflect the mastery demonstrated by the Final Exam. For instance, if a student's lowest unit score is 53, but on that material on the Final Exam the student gets 40 out of 50 points (80%), the 53 will be changed to an 80. Only the lowest unit score will be subject to this potential adjustment.

Students whose unit exam average is at least a 75 have the option of not taking the Final Exam. If such a student does not show up for the Final, the unit scores will be averaged and the result entered as the Final Exam score. This student will not have the opportunity of improving the lowest unit score. If a student actually takes the Final Exam, the score received will be the one recorded. I will not take the unit exam average, even if the unit average is better than the Final Exam score.

Final Exams are allotted 2 ½ hours. Extended time students will be given 3 hrs, 45 min. The one point per late minute will apply to Final Exams as well as Unit Exams.

Electronic communication devices (cell phones, walkie-talkies, hidden microphones, etc) are prohibited from the classroom on exam days. If you forget and bring one to class, it must be left on the front table (turned off) during the exam.

General Chemistry CHEM 111 Fall 2011

8/29 getting started chapter 1	8/31 chapter 1	9/2 chapter 2	8/30 Check-in Safety Eleusis
9/5 chapter 2	9/7 chapter 3	9/9 chapter 3	9/6 Laboratory Glassware
9/12 chapter 3	9/14 chapter 3	9/16 Exam One	9/13 Alka-Seltzer
9/19 chapter 4	9/21 chapter 4	9/23 chapter 6	9/20 Project One
9/26 chapter 6	9/28 chapter 6	9/30 chapter 6	9/27 Project One
10/3 chapter 6	10/5 chapter 7	10/7 chapter 7	10/4 Heat Content in Fuels
10/10 chapter 7	10/12 chapter 7	10/14 Exam Two	10/11 Hess
10/17 Fall Break	10/19 chapter 8	10/21 chapter 8	10/18 Fall Break
10/24 chapter 8	10/26 chapter 9	10/28 chapter 9	10/25 Project Two
10/31 chapter 10	11/2 chapter 10	11/4 chapter 11	11/1 Project Two
11/7 chapter 11	11/9 spectroscopy	11/11 Exam Three	11/8 Spectroscopy
11/14 chapter 5	11/16 chapter 5	11/18 chapter 5	11/15 Hydrogen Generation
11/21 chapter 5	11/23 Thanksgiving	11/25 Break	11/22 MW detn
11/28 chapter 12	11/30 chapter 12	12/2 chapter 12	11/29 Intermolecular Forces
12/5 chapter 13	12/7 Exam Four	12/9 course review	12/6 Laboratory Exam (and checkout)

(3:30 - 6:00 pm Monday, December 12 Cumulative Final Exam)

LABORATORY

There will be NO cell phone activity permitted in the laboratory.

There will be two types of laboratory activity, S labs are usually performed individually and have laboratory skill development and reinforcement of lecture concepts as the primary goals. The other type of activity, the P lab, is a group project where the students must work as a team to solve a chemical problem.

For the S labs there is a pre-laboratory assignment posted electronically. This includes a short presentation about the experiment and is followed by a 5 question quiz. These presentations will be made available one week prior to the scheduled activity, and the quiz **must be completed** before you come to lab. Your performance on the quiz will impact the grade you receive on that laboratory report in the following manner:

# of questions answered correctly	lab report score adjustment
0	- 15
1	- 10
2	- 5
3	- 3
4	0
5	+3

Thus, if you get 3 questions correct on the pre-lab quiz and your lab report would normally receive an 85, the actual score will be an 82. All of the S labs counted together count as 60% of the overall lab grade. Furthermore, you must prepare an initial page in your laboratory notebook relating to that day's laboratory experience. You will not be allowed into the room without this.

There will be two major projects students will perform as teams. Each project will count 20% of the laboratory grade. * Secret word number two: bamboo These activities are designed to give you a chance to plan an experiment, respond to unexpected difficulties in the laboratory, and communicate your results in a meaningful format.

Attendance in the laboratory is mandatory. Your team depends upon your contribution in the projects. If you have to miss a laboratory due to an **emergency** you should inform the instructor as soon as possible, as well as your team members. They will inform you about their activities during the lab period and may decide to assign you make-up work, such as a library search for background material. If you miss a P laboratory for an unexcused reason your individual grade on that project will reflect the absence. You will be compromising the success of the project, but the other team members' grades will not suffer. Look back at the first page of this coursepack for an important item regarding laboratory attendance! You will generally be given a planning day to work out your proposed approach to the problem. No laboratory work is permitted until this plan is approved by the instructor. No unauthorized access to the laboratory is permitted. All experiments must be completed while the instructor or lab aide is present. Speaking of safety, if any member of the team is functioning in the laboratory without wearing safety goggles, the whole team is charged 2 points on the final report. Keep each other safe!

Laboratory Final

On Tuesday, December 6 the laboratory session will be devoted to two activities. The class will be given a laboratory practical exam which should take about an hour to complete. Half the class will come at the scheduled start of the laboratory period and half will come 90 minutes later. * secret word three: dragonfly Performance on this 30 point exam will impact the overall laboratory grade as follows:

0 - 12	-3
13 - 15	-2
16 - 18	-1
19 - 21	0
22 - 24	+1
25 - 27	+2
28 - 30	+3

If your average laboratory grade is a 79 and you get 26 points on the lab final, your lab average will be adjusted to an 81. That will then be factored into the overall course grade.

After you have completed the exam, you will check out the lab station (should take about five minutes) before you leave.

An interesting formula:

[done] = fraction of the total course points which have been completed

[to go] = fraction of the total course points still remaining

[now] = your current overall average in the course

[desired] = the final average you would like to finish with

[required] = the average score you must attain on all remaining assignments

$$[\text{required}] = \frac{([\text{desired}] - ([\text{done}] \cdot [\text{now}]))}{[\text{to go}]}$$

For example, if you presently have a 72 in a course which is 63% complete, but you want to finish the term with an 80, you would have to average 93.5 points on all assignments remaining.

$$\frac{80 - (0.63)(72)}{(0.37)} = 93.5$$