

Instructor: David K. Geiger, Greene 338A, 245-5452, geiger@geneseo.edu

Office Hours: Monday and Wednesday 9:30-11:20 and by appointment.

VRS: A *voluntary* review session is held every Monday 2:30-3:20 in Newton 202.

Textbook: M. S. Silberberg, *Chemistry: The Molecular Nature of Matter and Change*, 4th ed., McGraw Hill, 2005 (ISBN: 0-07-255820-4). The text is required. The optional *Student Solutions Manual* and *Student Study Guide* for the text are available.

Tutors: The Chemistry Department provides free tutoring for this course. Your tutors are **Phuong Dau** and **Peter Kang**. They will be available at one of the desks in the corridor of the third floor of Greene or in the Chemistry Learning Center (Greene 224). The tutors are there to help you, but not to work on quizzes with you. The schedule of hours is to the right.

Day	Time	Tutor
Monday	5:00-8:30	Peter
Tuesday	11:15-2:15	Phuong
Tuesday	3:30-5:30	Peter
Wednesday	6:00-9:00	Phuong
Thursday	3:30-6:00	Peter
Thursday	6:00-8:00	Phuong

Learning outcomes: Your Chem 116 grade is outcomes based (i.e., based on your performance on tests, quizzes and a final exam). You will be tested on your ability to

- derive results from raw data and express the results appropriately
- balance chemical equations and use stoichiometry in quantitative calculations
- determine the enthalpy changes that accompany a chemical reaction or a change in physical state
- derive the electron configurations of atoms and ions
- predict chemical reactivity based on trends in periodic properties
- describe the differences between ionic and molecular substances and make predictions of physical and chemical properties
- describe bonding in compounds in terms of hybrid and/or molecular orbitals.
- draw Lewis structures and use them to predict molecular structure
- predict relative orders of the physical properties of compounds based on your understanding of intermolecular interactions
- perform calculations interrelating cell contents, densities and cell dimensions for substances crystallizing with cubic unit cells.

Grades: Your grade will depend on your performance on four tests, web-based quizzes (see below), and a comprehensive final examination. These components are weighted as follows

- **Tests** **60%**
- **Quizzes** **15%**
- **Final exam** **25%**

Tests begin at **8:00** a.m. and end promptly at 9:20 a.m. The schedule is

- **Test 1** **Monday, September 25**
- **Test 2** **Friday, October 20**
- **Test 3** **Wednesday, November 15**
- **Test 4** **Monday, December 11**
- **Final exam** **Monday, December 18, 8:00-11:00 AM**

>92	A
88	A-
84	B+
80	B
75	B-
70	C+
65	C
60	C-
50	D
<50	E

The instructor reserves the right to rearrange the course sequence due to time limitations or unforeseen circumstances. The test dates are firm. There is a two-week statute of limitations on test and quiz grades, i.e., no grades will be changed two weeks after an assignment is returned. There are no exceptions. The grading scale to the right and the weighting scheme above are nonnegotiable. *There are no exam "retakes" or extra credit projects.*

Readings: Reading assignments will be given in class and can be found on the class schedule below. You are expected to review these assignments before lecture.

Quizzes: You will have a quiz approximately once a week except on exam weeks. Quizzes are taken via the internet and are accessed from the instructor's web site. They must be submitted by the due date and time and are independent efforts. Once you enter your results, they are final. Resubmission of answers will result in a penalty and the lowest score will be recorded. Data entry is automatically cut off at a pre-assigned date and time, thus assignments cannot be accepted after the due date. Successful data submission will result in a screen indicating so. Be sure to enter your name and Geneseo ID number for each submission.

Attendance: College policy regarding attendance is stated in the *Undergraduate Bulletin*. Tests will be given only during the scheduled time. Failure to take a scheduled test is a serious matter. *The privilege of taking a make-up test will only be granted if the absence was authorized or due to a verifiable emergency.* Absences due to illness must be registered with the College Health Services Center or a personal physician.

Accommodations: SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Assistant Dean for Disability Services (Tabitha Buggie-Hunt, 105D Erwin, tbuggieh@geneseo.edu) and their individual faculty regarding any needed accommodations as early as possible in the semester.

Advice: Conventional wisdom says that you should spend three hours outside of class for every hour in class to succeed in a college course. This is low estimate for courses in the physical sciences. You must make a serious time commitment to do well in this class. I guarantee that you will be challenged.

- Use your study tools: the text, notes, solutions manual, tutors and me! Do not be afraid to ask for help. Do not wait until the last minute to prepare for exams or to work on quizzes.
- You can not do well in a chemistry class by using rote memorization! Understanding the concepts makes problem solving much easier. When working through practice problems, try to solve them with the book closed. If you must page through the text or your notes to work through a problem, you do not understand it.
- Form a study group. Studies have shown that most students benefit from working in a group.
- Give a quick read through of assignments before class, focusing on figures and tables, and give a thorough read after class. Read for comprehension and take notes as you read.

Schedule of Classes

Topic	Chapter	Dates
Basic Concepts	1,2	Aug. 28, 30; Sept. 1
Labor Day	--	Sept. 4
Stoichiometry	3.1-3.4	Sept. 6, 8, 11, 13
Aqueous Reactions and Solution Stoichiometry	3.5, 4	Sept. 15, 18, 20, 22
Test 1	--	Monday Sept 25
Gases	5	Sept. 27, 29; Oct. 2, 4
Thermochemistry	6	Oct. 6
Fall Break	--	Oct. 9
Thermochemistry (continued)	6	Oct. 11, 13, 16, 18
Test 2	--	Friday Oct. 20
Atomic Structure and Periodicity	7,8	Oct. 23, 25, 27,30
Basic Concepts of Chemical Bonding	9	Nov. 1, 3, 6
Lewis Structures and Molecular Geometry	10	Nov. 8, 10, 13
Test 3	--	Wednesday Nov. 15
Valence Bond and Molecular Orbital Theories	11	Nov. 17, 20
Thanksgiving Break	--	Nov. 22, 24
Bonding (continued)	11	Nov. 27, 29
Changes of State, Liquids and Solids	12	Dec. 1, 4, 6, 8
Test 4	--	Monday Dec. 11
Final Exam (8-11 a.m.)	--	Monday Dec. 18

Note well the test dates. Plan ahead.

Suggested Study Problems

Chapter	Problems
1	6, 8, 28, 30, 34, 36, 45, 66, 70, 76, 82, 88
2	4, 14, 22, 27, 34, 39, 43, 45, 50, 53, 56, 61, 68, 70, 76, 82, 84, 88, 92, 94, 96, 102, 108, 117, 125, 145
3	2, 10, 12, 14, 18, 23, 29, 35, 39, 46, 53, 61, 71, 73, 83, 94, 96, 98, 109, 111, 120, 128, 139
4	6, 14, 16, 20, 31, 33, 35, 37, 45, 47, 49, 58, 60, 62, 64, 66, 68, 70, 74, 76, 108, 115, 124, 132
5	1, 10, 12, 20, 24, 26, 28, 30, 40, 42, 44, 48, 53, 55, 66, 67, 71, 73, 80, 86, 95, 135
6	10, 19, 26, 33, 35, 39, 48, 49, 50, 58, 63, 67, 70, 77, 80, 81, 95, 103, 108
7	5, 7, 9, 11, 16, 20, 23, 27, 34, 41, 48, 49, 51, 53, 55, 57, 59, 63, 75, 81, 88, 92
8	6, 9, 11, 13, 21, 27, 29, 31, 33, 35, 39, 53, 55, 59, 64, 68, 74, 76, 78, 82, 86
9	6, 12, 14, 17, 20, 24, 26, 30, 33, 35, 39, 41, 44, 48, 50, 51, 54, 57, 59, 61, 65, 74, 76, 91
10	1, 3, 5, 7, 9, 11, 13, 17, 21, 23, 26, 32, 34, 36, 40, 44, 46, 55, 57, 59, 67, 86, 88
11	1, 3, 5, 7, 9, 13, 20, 21, 25, 26, 28, 32, 34, 36, 40, 42, 44, 46, 56, 58
12	4, 5, 7, 9, 14, 18, 19, 34, 37, 39, 41, 43, 45, 47, 49, 51, 53, 61, 63, 78, 84, 90, 92, 98, 130, 145, 147