CHE 106: General Chemistry I Lecture

Fall 2017, MWF 12:45 – 1:40 pm, Stolkin Auditorium – Physics Building

Instructor: Prof. Weiwei Zheng

Office: 3-050 Center for Science and Technology (CST)

Office hours: by appointment, schedule via email

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Course description:

Fundamental principles and laws underlying chemical action, states of matter, atomic and molecular structure, chemical bonding, stoichiometry, properties of solutions, chemical equilibria, and introductory thermochemistry (3 credits)

This course is composed of a lecture and recitation component. Please check with your course schedule for the time and meeting place of your recitation section.

Textbook and Supporting Materials (AVAILABLE AT THE SU BOOKSTORE):

- **Chemistry the Central Science** (14th edition or Syracuse Custom Edition) by Brown, LeMay, Bursten, Murphy, Woodward, Stoltzfus (Pearson/Prentice Hall, 2017)
- **MasteringChemistry On-Line Homework** 31-digit login/registration key.
- MasteringChemistry is accessed ONLY through the **Blackboard course website**. This Blackboard version is often referred to as "modified MasteringChemistry".
- Register using your **SU ID number** and
  Course Name: CHE106ZhengFall2017

NOTE: If you do not want to buy the textbook package from the SU Bookstore, both the e-book version of the textbook and the MasteringChemistry login can be purchased directly from: http://masteringchemistry.com/.

Your basic course responsibilities:

- Attend lectures (please silent your cell phone), read the appropriate material prior to class time, and study your lecture notes.
- Attend recitations to help reinforce your learning.
- Do assigned homework ON TIME and review them before exams. Do not fall behind!
- Take all of the examinations.
- BRING A CALCULATOR TO ALL EXAMS (cell phones/tablets/other devices are not allowed).
- If you have any questions or concerns about the homework, the in-class exams, or anything else, it is the responsibility of the student to contact Prof. Zheng to get help in a timely manner.

Approximate lecture schedule. The following schedule of classes lists the approximate topics that will be covered along with the relevant readings in the textbook. Please complete the readings before the scheduled lecture.

Week	Monday	Wednesday	Friday
1	**8/28** Course Overview and Introduction	**8/30** (Chapter 1.1-1.3) Introduction to Chemistry, Classification of Matter	**9/1** (Chapter 1.3-1.5) Energy, Math Skills and Measurements
2	**9/4** Labor Day No Classes	**9/6** (Chapter 1.5-1.7) Unit Conversion and Dimensional Analysis	**9/8** (Chapter 2.1-2.3) Atomic Theory, Atomic Structure,
3	**9/11** (Chapter 2.4-2.6) Periodic Table, Molecules, Compounds	**9/13** (Chapter 2.7-2.8) Ions, Naming Inorganic and Simple Organic Compounds	**9/15** (Chapter 3.1-3.3) Chemical Equations, Chemical Reactivity, Stoichiometry
4	**9/18** (Chapter 3.3-3.5) Mass and Formula Weight, Mole Theory	**9/20** (Chapter 3.6-3.7) Limiting Reactants, Theoretical Yield	**9/22** (Chapter 4.1-4.3) Precipitation and Acid/Base Reactions
5	**9/25** **Examination I** (Chapters 1, 2, 3)	**9/27** (Chapter 4.4) Oxidation-Reduction Reactions	**9/29** (Chapter 4.5-4.6) Solution Calculations and Stoichiometry
6	**10/2** (Chapter 5.1-5.2) Energy and Thermodynamic Laws	**10/4** (Chapter 5.3-5.4) Enthalpy of Reaction	**10/6** (Chapter 5.5-5.6) Calorimetry and Hess's Law
7	**10/9** (Chapter 5.7-5.8 (5.9)) Enthalpy of Formation and Special Topics	**10/11** (Chapter 6.1-6.2) Electromagnetic Spectrum, Light Waves, Photons	**10/13** (Chapter 6.3-6.5) Bohr Model and Quantum Mechanics
8	**10/16** (Chapter 6.5-6.7) Quantum Mechanics and Orbitals	**10/18** (Chapter 6.8-6.9) Electron Configuration and Pauli Exclusion Principle	**10/20** (Chapter 7.1-7.3) Periodic Trends and Effective Nuclear Charge
9	**10/23** **Examination II** (Chapters 4, 5, 6)	**10/25** (Chapter 7.4-7.5) Ionization Energy and Electron Affinity	**10/27** (Chapter 7.6-7.8) Metals, Nonmetals, and Metalloids
10	**10/30** (Chapter 8.1-8.2) Ionic Bonding	**11/1** (Chapter 8.3-8.4) Covalent Bonding, Polarity and Electronegativity	**11/3** (Chapter 8.5-8.6) Lewis Structures and Resonance Structures
11	**11/6** (Chapter 8.7-8.8) Comparing Covalent Bonds	**11/8** (Chapter 9.1-9.2) Molecular Shapes and VSEPR Theory	**11/10** **Examination III** (Chapters 7, 8)
12	**11/13** (Chapter 9.3-9.4) Molecular Polarity, Orbital Overlap	**11/15** (Chapter 9.5-9.6) Hybrid Orbitals, Multiple Bonds	**11/17** (Chapter 9.7-9.8) Molecular Orbital Theory
13	**11/20 – 11/25** Thanksgiving Break No Classes		
14	**11/27** (Chapter 10.1-10.3) Introduction to Gases, Gas Laws	**11/29** (Chapter 10.4-10.6) Ideal Gas Law, Gas Mixtures, Partial Pressures	**12/1** (Chapter 10.7-10.9) Kinetic Molecular Theory, Effusion, Diffusion, Real Gases
15	**12/4** Review All Chapters	**12/6** **Examination IV** (Chapters 9, 10)	**12/8** No Class Open Office Hours
16	**12/11** **Cumulative exam (optional)** Stolkin Auditorium. 12:45 – 2:45 PM (Chapters 1-10)		

RECITATIONS

- Recitation attendance is not mandatory and will not be recorded. There is NO grade associated with the recitation.
- Each week in recitation, the homework assignments specified on the MasteringChemistry website will be discussed. Students will have the opportunity to ask questions about these exercises and also the relevant text and lecture material. Recitations are designed to help you learn the material and answer particular questions that you may have. They are run as question and answer sessions and are in no way intended to replace the regular lecture. However, I suggest that you attend the recitations to enhance your learning.
- Please note that the assigned homework is NOT due in recitation. All homework must be performed and submitted on the MasteringChemistry website. See the MasteringChemistry website for specific due dates and times. NO EXCEPTIONS.

Teaching Assistants (TAs) for the CHE 106 course (recitation instructors)

- **Andrew Davis** adavis11@syr.edu Office hours: Monday 2:30-3:30 pm (M014, M015, and M022)
- **Elan Hofman** ejhofman@syr.edu Office hours: Monday 3:45-4:45 pm (M016, M017, M019, M021)

TA office hours will be held in Room 115 of the Life Science Building (LSB). A schedule of office hours will be posted on the door of Room 115. Students are free to seek help from ANY of the CHE 106 TAs that are teaching this semester, not just the TA that is in charge of their particular recitation section.

NOTE: The CHE 106 (General Chemistry Lecture) Instructor and TAs have NO connection to the CHE 107 (General Chemistry Laboratory) course in any way. CHE 107 is taught and graded totally separately from CHE 106. If you have questions regarding CHE 107, you must contact the CHE 107 Instructor or TAs.

RECITATION & HOMEWORK SCHEDULE

- The following is an APPROXIMATE schedule of material that will be discussed in the recitations and the homework that is due on the MasteringChemistry website organized by week. ALL homework is to be done and turned in on the MasteringChemistry website. No exceptions. The textbook contains the answers to some of the odd-numbered problems. If you are having difficulty, refer to the Student Guide included in your textbook package to support your learning.
- Several copies of the Student Guide are held on reserve in the Carnegie Library. The TA office hours in LSB 115 are also an excellent resource.
- The MasteringChemistry tutorials are MANDATORY and they are graded. It is highly recommended that you complete the Tutorial for a chapter BEFORE attempting the Homework for that chapter since the Tutorials are designed to help prepare you for the Homework problems.

NOTE: It is strongly suggested that you complete your homework BEFORE the listed deadlines. Do not procrastinate.

NOTE: Notice that during exam weeks, some of the homework that will be included in the exam subject matter may be due AFTER the exam date. **Despite the homework due date, you are still responsible for that material on the exam**.

NOTE: Turning in your homework late, is better than not turning it in at all.

The weekly schedule shown here runs from Monday to Sunday

CONSULT THE MASTERINGCHEMISTRY WEBSITE FOR ACTUAL ASSIGNED PROBLEMS.

NOTE: BOTH TUTORIAL AND HOMEWORK ASSIGNMENTS ARE MANDATORY.

Recitation Weeks	General Material to be Discussed	MasteringChemistry Assignments	Due Date (due at ~midnight, 11:59PM)
Week of August 28	**NO RECITATIONS / NO HOMEWORK DUE**		
Week of September 4	Chapter 1	Introduction to MasteringChemistry, Homework & Tutorial #1	Sunday, September 10
Week of September 11	Chapter 2	Homework & Tutorial #2	Sunday, September 17
Week of September 18	Chapter 3	Homework & Tutorial #3	Sunday, September 24
Week of September 25	**Exam #1**	-	**NO HOMEWORK DUE**
Week of October 2	Chapter 4	Homework & Tutorial #4	Sunday, October 8
Week of October 9	Chapter 5	Homework & Tutorial #5	Sunday, October 15
Week of October 16	Chapter 6	Homework & Tutorial #6	Sunday, October 22
Week of October 23	**Exam #2**	-	**NO HOMEWORK DUE**
Week of October 30	Chapter 7	Homework & Tutorial #7	Sunday, November 5
Week of November 6	Chapter 8 & **Exam #3**	Homework & Tutorial #8	Sunday, November 12
Week of November 13	Chapter 9	Homework & Tutorial #9	**NO HOMEWORK DUE**
Week of November 20	**THANKSGIVING BREAK**	**THANKSGIVING BREAK**	**NO HOMEWORK DUE**
Week of November 27	Chapter 9	Homework & Tutorial #9	Sunday, December 3
Week of December 4	Chapter 10 & **Exam #4**	Homework & Tutorial #10	Sunday, December 10

COURSE POLICIES

Grading policy

Exams will cover both material covered in lecture and the assigned text readings. Some questions may come from lecture (not covered in text) and others from the text (not covered in lecture). The majority of questions will be problems similar to the assigned homework and tutorial exercises. Lots of practice with problems is the key to success in this course. Each exam will focus on specific chapters as noted in the syllabus and in the lecture notes.

Exams are given during the regular class period, with the exception of the OPTIONAL cumulative exam.

First Exam **Monday, September 25**
Second Exam **Monday, October 23**
Third Exam **Friday, November 10**
Fourth Exam **Wednesday, December 6**
***OPTIONAL* Cumulative Exam** **MONDAY, DECEMBER 11 from 12:45 – 2:45 PM**

>>>>>> MAKE YOUR TRAVEL PLANS NOW! <<<<<<

NO ACCOMMODATIONS FOR STUDENT TRAVEL/EXAM CONFLICTS WILL BE MADE.

What is the Optional Cumulative Exam?

The exam scheduled for December 12 is a completely optional exam that students may choose to take to replace the lowest score they have received on any of the regular in-class exams taken during the semester. For example, a student scores 80%, 30%, 75%, and 85% on the in-class exams, and chooses to take the cumulative exam. They score a 60% on the cumulative exam, which then replaces the 30% grade they scored on Exam #2. There is no penalty for receiving a low score on the cumulative exam. Warning: The cumulative exam will be more difficult than a regular in-class exam.

Final Grade Determination

Course grades are based on the exams and the on-line homework. The grading scale shown below is based on historical class averages and grade distributions for the first-semester general chemistry course. Additional "curving" of the class grades will normally NOT be applied, but Professor Korter reserves the right to do so in extraordinary cases. In such a case, scores will only be curved up (not down) and therefore will never negatively impact your letter grade. There will be no "extra credit" offered in this course.

The final grade will be computed using the following items and weightings:

Four, In-Class Exams (20% each)	80%
MasteringChemistry Online Homework	20%
Course Total:	100%

The equation to calculate your overall course raw score percentage is:
(Exam #1 %)×0.20 + (Exam #2 %)×0.20 + (Exam #3 %)×0.20 + (Exam #4 %)×0.20 + (Homework %)×0.20 = Overall %

Letter grade ranges based upon raw score percentages:

A- = 89%	**A = ≥90%**	
B- = 79%	**B = 80-87%**	**B+ = 88%**
C- = 69%	**C = 70-77%**	**C+ = 78%**
	D = 60-68%	
	F = ≤59%	

Attendance
Attendance is not recorded in lecture. However, there is a very strong correlation with good attendance and good grades, so it is in your own best interest to attend lectures regularly. **Medical absences** will be excused based on written advice from the Health Center or a health-care provider (based upon clinical findings and prescribed treatment recommendations). See: http://health.syr.edu/students/policies.html. NO VERBAL EXCUSES WILL BE ACCEPTED. The medical document must specifically indicate that you were unable to attend class/recitation. All such absences will be verified by Chemistry Department staff.
THERE WILL BE NO MAKEUP EXAMINATIONS EXCEPT IN THE CASE OF ADVANCE-NOTICE APPROVED ABSENCES. ALL ADVANCED-NOTICE APPROVALS WILL RESULT IN AN OPPORTUNITY TO TAKE THE EXAM IN ADVANCE, NOT AFTER THE REGULARLY SCHEDULED EXAM TIME.

Accommodations for Students with Disabilities
If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), visit the ODS website– http://disabilityservices.syr.edu, located in Room 309 of 804 University Avenue, or call (315) 443-4498 or TDD: (315) 443-1371 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented Disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. For more information, see: http://disabilityservices.syr.edu/services-accommodations/

Academic Integrity
Complete academic honesty is expected of all students. Any incidence of academic dishonesty, as defined by the Syracuse University Academic Integrity Policy (http://academicintegrity.syr.edu), will result in both course sanctions and formal notification of the College of Arts & Sciences. In this course, students are allowed and strongly encouraged to study together, but exams and online problem sets must represent the work of the individual student. Online problem sets must be completed by each student using his or her own access account, though reference to the text and lecture notes is allowed.
Syracuse University's Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the policy and know that it is their responsibility to learn about course-specific expectations, as well as about university policy. The university policy governs appropriate citation and use of sources, the integrity of work submitted in exams and assignments, and the veracity of signatures on attendance sheets and other verification of participation in class activities. The policy also prohibits students from submitting the same written work in more than one class without receiving written authorization in advance from both instructors. The presumptive penalty for a first offense by an undergraduate student is course failure, accompanied by a transcript notation indicating that the failure resulted from a violation of Academic Integrity Policy. The standard sanction for a first offense by a graduate student is suspension or expulsion. For more information and the complete policy, see http://academicintegrity.syr.edu.

Religious Observances
SU's religious observances policy is available at http://supolicies.syr.edu/emp_ben/religious_observance.htm
Syracuse University recognizes the diversity of faiths represented among the campus community and protects the right of students, faculty, and staff to observe the holy days according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance—provided they notify their instructors before the end of the second week of classes. Students have access to an online notification form through MySlice that they can use to notify their instructors.