

CHE 106: General Chemistry I Lecture

Fall 2018, 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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* Teaching assistant office hours to be announced

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: CHE106ZhengFall2018

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	8/27 Course Overview and Introduction	8/29 (Chapter 1.1-1.3) Introduction to Chemistry, Classification of Matter	8/31 (Chapter 1.3-1.5) Energy, Math Skills and Measurements
2	9/3 Labor Day No Classes	9/5 (Chapter 1.5-1.7) Unit Conversion and Dimensional Analysis	9/7 (Chapter 2.1-2.3) Atomic Theory, Atomic Structure
3	9/10 (Chapter 2.4-2.6) Periodic Table, Molecules, Compounds	9/12 (Chapter 2.7-2.8) Ions, Naming Inorganic and Simple Organic Compounds	9/14 (Chapter 3.1-3.3) Chemical Equations, Chemical Reactivity, Stoichiometry
4	9/17 (Chapter 3.3-3.5) Mass and Formula Weight, Mole Theory	9/19 (Chapter 3.6-3.7) Limiting Reactants, Theoretical Yield	9/21 (Chapter 4.1-4.2) Aqueous Solutions and Precipitation Reactions
5	9/24 Examination I (Chapters 1, 2, 3)	9/26 (Chapter 4.3-4.4) Acid/Base and Oxidation-Reduction Reactions	9/28 (Chapter 4.4-4.6) Solution Calculations and Stoichiometry
6	10/1 (Chapter 5.1-5.2) Energy and Thermodynamic Laws	10/3 (Chapter 5.3-5.4) Enthalpy of Reaction	10/5 (Chapter 5.5-5.6) Calorimetry and Hess's Law
7	10/8 (Chapter 5.7-5.8 (5.9)) Enthalpy of Formation and Special Topics	10/10 (Chapter 6.1-6.2) Electromagnetic Spectrum, Light Waves, Photons	10/12 (Chapter 6.3-6.5) Bohr Model and Quantum Mechanics
8	10/15 (Chapter 6.5-6.7) Quantum Mechanics and Orbitals	10/17 (Chapter 6.8-6.9) Electron Configuration and Pauli Exclusion Principle	10/19 (Chapter 7.1-7.3) Periodic Trends and Effective Nuclear Charge
9	10/22 Examination II (Chapters 4, 5, 6)	10/24 (Chapter 7.4-7.5) Ionization Energy and Electron Affinity	10/26 (Chapter 7.6-7.8) Metals, Nonmetals, and Metalloids
10	10/29 (Chapter 8.1-8.2) Ionic Bonding	10/31 (Chapter 8.3-8.4) Covalent Bonding, Polarity and Electronegativity	11/2 (Chapter 8.5-8.6) Lewis Structures and Resonance Structures
11	11/5 (Chapter 8.7-8.8) Comparing Covalent Bonds	11/7 (Chapter 9.1-9.2) Molecular Shapes and VSEPR Theory	11/9 Examination III (Chapters 7, 8)
12	11/12 (Chapter 9.3-9.4) Molecular Polarity, Orbital Overlap	11/14 (Chapter 9.5-9.6) Hybrid Orbitals, Multiple Bonds	11/16 (Chapter 9.7-9.8) Molecular Orbital Theory
13	11/19 – 11/23 Thanksgiving Break No Classes		
14	11/26 (Chapter 10.1-10.3) Introduction to Gases, Gas Laws	11/28 (Chapter 10.4-10.6) Ideal Gas Law, Gas Mixtures, Partial Pressures	11/30 (Chapter 10.7-10.8) Kinetic Molecular Theory, Effusion, Diffusion
15	12/3 Review All Chapters	12/5 Examination IV (Chapters 9, 10)	12/7 No Class Open Office Hours
16			12/14 Cumulative exam (optional) Stolkin Auditorium. 10:15 AM– 12:15 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)

- **Elan Hofman** ejhofman@syr.edu
- **Alec Beaton** aabeaton@syr.edu

TA office hours will be held in **Room 202** of the Life Science Building (LSB). A schedule of office hours will be posted on the door of Room 202. 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 I 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 at the end of each chapter. 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 202 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: Turning in your homework late, is better than not turning it in at all.

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.**

GROUP TUTORING

The SU Center for Learning and Student Success (CLASS) will offer free group tutoring for CHE 106. The schedule will be announced. Students can signup for these free group sessions (6 to 10 students) directly online by going to: <http://class.syr.edu/tutoring/get-a-tutor/>.

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 27	NO RECITATIONS / NO HOMEWORK DUE		
Week of September 3	Chapter 1	Introduction to MasteringChemistry, Homework & Tutorial #1	Sunday, September 9
Week of September 10	Chapter 2	Homework & Tutorial #2	Sunday, September 16
Week of September 17	Chapter 3	Homework & Tutorial #3	Sunday, September 23
Week of September 24	Exam #1	-	NO HOMEWORK DUE
Week of October 1	Chapter 4	Homework & Tutorial #4	Sunday, October 7
Week of October 8	Chapter 5	Homework & Tutorial #5	Sunday, October 14
Week of October 15	Chapter 6	Homework & Tutorial #6	Sunday, October 21
Week of October 22	Exam #2	-	NO HOMEWORK DUE
Week of October 29	Chapter 7	Homework & Tutorial #7	Sunday, November 4
Week of November 5	Chapter 8 & Exam #3	Homework & Tutorial #8	Sunday, November 11
Week of November 12	Chapter 9	Homework & Tutorial #9	NO HOMEWORK DUE
Week of November 19	THANKSGIVING BREAK	THANKSGIVING BREAK	NO HOMEWORK DUE
Week of November 26	Chapter 10	Homework & Tutorial #9	Sunday, December 2
Week of December 3	Exam #4	Homework & Tutorial #10	Sunday, December 9

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 24**

Second Exam **Monday, October 22**

Third Exam **Friday, November 9**

Fourth Exam **Wednesday, December 5**

***OPTIONAL* Cumulative Exam** **Friday, December 14 from 10:15 AM– 12:15 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 11 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 16, 6, 15, and 17 on the in-class exams, and chooses to take the cumulative exam. They score a 12 on the cumulative exam, which then replaces the 6 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 Zheng 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.

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 is:

$$\text{Overall grade} = (\text{Exam \#1}) \times 20\% + (\text{Exam \#2}) \times 20\% + (\text{Exam \#3}) \times 20\% + (\text{Exam \#4}) \times 20\% + (\text{Homework}) \times 20\%$$

Bonus points: up to 2 bonus points from quizzes in optional recitation sessions and 1 bonus point for attending 10+ sessions at CHE 106 group tutoring sessions.

Letter grade ranges based upon raw score:

A- = 88-89	A = ≥90	
B- = 75-79	B = 80-84	B+ = 85-87
C- = 60-64	C = 65-69	C+ = 70-74
	D = 50-59	
	F = <50	

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)– <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 reflects the high value that we, as a university community, place on honesty in academic work. The policy defines our expectations for academic honesty and holds students accountable for the integrity of all work they submit. Students should understand that it is their responsibility to learn about course-specific expectations, as well as about university-wide academic integrity expectations. The 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 work in more than one class without receiving written authorization in advance from both instructors. Under the policy, students found in violation are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered as described in the Violation and Sanction Classification Rubric. Syracuse University students are required to read an online summary of the University's academic integrity expectations and provide an electronic signature agreeing to abide by them twice a year during pre-term check-in on MySlice.

The Violation and Sanction Classification Rubric establishes recommended guidelines for the determination of grade penalties by faculty and instructors, while also giving them discretion to select the grade penalty they believe most suitable, including course failure, regardless of violation level. Any established violation in this course may result in course failure regardless of violation level.

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.