

Chemistry 101-001 – Fall 2010 Lecture Syllabus

- Course:** Chemistry 101, General Chemistry A, 3 Credits: Lecture and discussion
- Prerequisites:** A satisfactory performance on the Loyola math proficiency test, or completion of Math 117 with a grade of C- or better. A student may be withdrawn from the course at any time if the prerequisites have not been satisfied.
- Lecture:** MWF 10:25-11:15 am Cudahy Hall 207 Dr. Helquist
You must also be registered in one of the accompanying discussion sections:
- Discussion:** F 8:15-9:05 am Flanner Hall 105 Dr. Helquist
F 9:20-10:10 am Flanner Hall 105 Dr. Helquist
- Instructor:** Dr. Sandra Helquist
- Email:** shelquist@luc.edu – put “Chem 101-001” in subject line to receive a response
- Office:** Flanner Hall 213
- Office Hours:** T 10:00-11:00 am; W 12:30-2:00 pm; F 12:30-2:00 pm; immediately after lectures, and by appointment. You are encouraged to drop by my office during open times (see the schedule posted outside my door if you cannot attend regular office hours.
- Textbook:** Chemistry & Chemical Reactivity, Kotz/Treichel/Townsend, 7th edition (Required)
OWL Online Homework Access Code (Required)
Study Guide and Solutions Manual to above text (Recommended)

Course Content & Objectives

This course is the first in a two-semester sequence of general chemistry. We will focus on building an understanding of fundamental chemical principles including properties of atoms, molecules, states of matter, and chemical reactions. Students will learn the language of chemistry and develop their skills in scientific problem solving to build a foundation for further study in chemistry, other sciences and related disciplines.

Course Materials

There is a required textbook for lecture as well as recommended study guides to accompany the lecture text. Additionally, you must register for the OWL online homework system (www.cengage.com/owl & additional information/links posted on Blackboard). You will need the use of a scientific calculator for problem solving – your calculator does not need to graph, but the use of cell phone calculators will not be permitted during exams and quizzes. Calculators cannot be shared during exams and quizzes, and will never be provided by the instructor. Lectures will be presented as a combination of “chalk talks” and overhead or PowerPoint slides. All handouts from the lecture will be available on Blackboard (blackboard.luc.edu) and scores will be recorded (each student should check these regularly to ensure accuracy) in the Blackboard grade center. The Announcements section of the course page on Blackboard will be used regularly to communicate useful information.

Class Attendance

Vital for your learning: you are responsible for all material presented or handed out, as well as reading and problems recommended in lecture and discussion even if you are not in attendance for a course meeting. For each class you are expected to indicate your presence by signing in on the class roster sheet, to be circulated during the lecture. Attendance and Attention is important and required. Prepare for lecture by scanning the new material to be covered. Come prepared to engage in discussion, ready to ask questions on homework or yet unassimilated lecture material -- especially bring questions to discussion classes. If you miss a class for any reason, contact a classmate promptly to get the notes.

Disability Accommodations

At times, students with disabilities may wish to avail themselves of the University’s ancillary services. Students who would like accommodations at the University need to contact the Coordinator of Services for Students with Disabilities. Contact information is available at <http://www.luc.edu/sswd/index.shtml>.

Academic Integrity

Research and learning in chemistry relies heavily on collaborative efforts. You are encouraged to study with other students during and outside of class, however, anything submitted for an individual grade must represent your own knowledge and understanding of the material. On exams you are expected to obtain information only from your own mind. Any student caught cheating will receive, at a minimum, a “zero” on the test, and penalty up to automatic failure of the course as well as referral to the Dean’s Office. See the University guidelines at http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml.

Grading

Your grade for Chemistry 101 will depend on the following factors:

Homework	15%
Quizzes	15%
<u>Exams</u>	<u>70%</u>
Total	100%

Generally, 90.0% is the lowest A-, 78.0% the lowest B-, 65.0% the lowest C-, 50.0% the lowest D. Chemistry is not easy to learn, thus the grading policy allows for the lowest midterm exam score to be dropped in order to reward improvement by the final exam (see details below). Each student will be assigned an estimated midterm grade following the 2nd midterm exam.

Homework

Online, via OWL system, can be accessed anywhere, on or off campus. Due every Wednesday at 11:59pm, strict deadline; “computer problems” do not merit extensions! OWL questions include easy- to moderate-level questions and are meant to help you learn the material by practicing it yourself. Full credit on each assignment (the total of points scored on the Required units) can be earned by re-doing questions as necessary and learning from your mistakes via the instant feedback provided by the OWL program. Students expecting the highest exam scores will further develop their understanding of the material and problem-solving skills by working the more difficult end-of-chapter problems as listed below.

Quizzes

Quizzes include a variety of easy to difficult exam-level questions and are 15 minutes in length, held at the beginning of each discussion period. No early quizzes, no make-ups in other sections. Your overall quiz score will be calculated as the total of your best ten scores. If you miss a quiz *for any reason*, that quiz will count as one of the dropped scores. Keep up with the material so that you can gauge your level of understanding on the quizzes in order to identify areas of weakness prior to the exams.

Exams

No early exams, no make-ups! Exams will consist of multiple-choice questions; scoring sheets will be provided by the instructor. Exams comprise 70% of your overall course grade, and will be automatically calculated by the instructor as the higher score between these two options:

Option 1: 3 midterms, 15% each; final exam, 25%; Total exam score = 70%

Option 2: 2 midterms, 15% each; final exam, 40%; Total exam score = 70%

Midterms: 50 minutes, Wednesday September 22, Wednesday October 20, Wednesday November 17. If you miss a midterm *for any reason*, Option 2 (above) will automatically be used to determine your grade. A second missed midterm will result in a score of *zero*. It is in each student’s best interest to take all exams. Final: 2 hours, Monday December 13, 9-11 am, **MANDATORY**. The final exam must be taken on the date scheduled or a grade of **F** will automatically result. Comprehensive, with emphasis on selected topics TBA.

Exam Day Procedure

Cell phones, PDAs, mp3 players, are not permitted. If seen or heard, will be confiscated along with exam copy and student will be asked to leave. Come to the exam with your Loyola ID, and leave visible on desk during exam to be checked. All purses, bags, jackets, etc must be left at front of the room. Once the exam is distributed, if you exit the room (quietly, please), for any reason before time is up, your exam is considered complete and will be collected. I will return your score sheets (photocopies will be kept) for the midterms only. Scoring errors must be brought to my attention in person no later than one week after the exams are returned. The final exam cannot be returned. A copy of the midterm exam questions will be posted in the display case by the elevators on 4th floor Flanner following each exam.

Study Strategies and Suggestions

Every semester, many students will ask, “how can I get an ‘A’ in the course?” The simple and difficult answer is that every student’s grade must be earned by demonstrating knowledge of the course material, and that there are no easy shortcuts. ‘A’ students work several chemistry problems every day!

Because many topics we will cover build heavily on prior material, the best plan is to study chemistry regularly, every day, similar to practicing the piano or training for a varsity sport. Experience dictates that positive outcomes (for exam scores and course grades) are directly proportional to working and UNDERSTANDING the assigned and suggested problems on a regular basis, i.e., applying the concepts learned in lecture to non-generic compounds and calculations. Overnight cramming will probably not produce success. The student should quickly read the chapter/sections to be covered before lecture to improve lecture comprehension. After lecture, careful detailed re-reading of the chapter/sections and focused working of the assigned and suggested problems are appropriate and expected, along with formulating follow-up/clarifying questions for your instructor by the next class meeting. Especially bring questions to discussion sections, as student-driven Q&A will be the focus of those class meetings.

If anticipating a passing grade of C-, the minimal time per week in the regular academic year devoted to General Chemistry is estimated at 4 hr for lecture/discussion, 2-3 hr for reading, and 2-4 hr for homework. It is up to the individual student to devote the time necessary to achieve the desired grade.

There are some things in any subject that must simply be memorized. Chemistry is no exception. Most commonly, you will be asked to learn systematic naming conventions, definitions and formulas, as well as important, fundamental constants and equations. Some students may find it helpful to make notecards or keep lists of important definitions to quickly master the material as needed to keep pace with the class.

You are encouraged to form study groups – talk to the people sitting next to you in lecture or discussion and exchange phone numbers or email addresses – and attend office hours regularly to receive help. You are urged to contact the instructor to discuss problems before they become serious.

Suggestions for exam success: Practice, practice, practice. On exams you will be asked to work problems, therefore, you should study by working problems. Listed on the next page are questions from your textbook that you may find particularly helpful. When you are working multistep problems from class, in OWL, and from your textbook, write out all of the steps clearly so that you can find your own mistakes and correct them promptly. Reading your textbook is expected on a regular basis to clarify material, assist with homework questions, etc, but reading and note-taking alone will probably not lead to high exam scores. You may wish to use the Chapter Goals as a review tool, or to make your own study guides/outlines prior to exams: find a review method that works for you. And practice, practice, practice, solving problems!

Familiarize yourself with strategies for answering multiple-choice questions. No partial credit is given on these questions, and you must check your work meticulously for small mistakes in set-up or calculation that could cause you to obtain an incorrect answer. Do not try to work multistep problems in your head or in your calculator as you will not be able to find your errors.

Pay attention to instructions given on and during each exam. You will lose points for failing to completely fill in your name and a 10-digit ID number, including the bubbles, on your answer sheet, and for keeping your exam and/or scoring sheet after time is called. Only answers that are filled in on the scoring sheet will be graded. At the beginning of every exam, look through all of the questions. Do not spend too much time on any single question and prioritize your time where it will be well spent. Before time is called, fill in an answer for every question: there are no penalties for guessing.

Tutoring Center

The Center for Tutoring & Academic Excellence offers free Small Group tutoring for Loyola students. The groups meet once a week through the end of the semester and are led by a peer tutor who has successfully completed study in the course material. For selected subjects, Tutor-led Study Hall is also available. There is no need to make an appointment for Study Hall hours, simply bring your coursework and there will be tutors on hand to assist you. To learn more or request tutoring services, visit the Center online at <http://www.luc.edu/tutoring>.

Recommended End-Of-Chapter Problems

From your book: these are to be completed for your own practice. All of the EOC's are worthy of your time, however, if you do not complete all of them, start with these. Work the problems without looking at the solutions manual: your goal is to solve these as if they were exam questions! For more practice with a particular topic, work the even numbered-problems. Red triangles denote the most difficult problems.

1: 9, 13, 21, 27, 33, 37

LR: 3, 7, 9, 13, 15, 19, 21, 29, 33, 37, 49, 51, 53, 55

2: 3, 5, 13, 15, 21, 29, 35, 39, 41, 45, 51, 57, 59, 63, 65, 67, 73, 79, 81, 85, 87*, 91, 93, 99, 107, 109, 115, 119, 125, 129, 133, 139, 141, 143

3: 5, 13, 19, 21, 27, 29, 35, 37, 39, 41, 43, 51, 53, 55, 59, 61, 65, 69, 77

4: 3, 5, 15, 17, 21, 25, 27, 29, 33, 37, 39, 41, 45, 47, 53, 57, 59, 61, 67, 69, 71, 73, 77, 83, 87, 93, 103, 105, 107, 113, 119, 133

5: 9, 13, 17, 21, 23, 27, 31, 35, 39, 41, 45, 49, 51, 57, 63, 69, 71, 73, 81, 85, 89, 107

6: 7, 9, 11, 17, 21, 25, 27, 35, 37, 41, 47, 53, 55, 59, 65, 67, 75, 83

7: 7, 11, 15, 21, 23, 27, 31, 35, 37, 39, 43, 47, 51, 57, 69, 73

8: 3, 5, 7, 11, 15, 19, 23, 31, 33, 35, 37, 39, 43, 45, 47, 51, 55, 63, 67, 69, 71, 75, 85, 89

9: 5, 7, 11, 21, 23, 27, 29, 33, 35, 51, 55

11: 3, 7, 9, 15, 19, 23, 25, 29, 31, 33, 35, 39, 41, 49, 57, 59, 61, 67, 79, 87, 89, 93, 99

12: 1, 3, 5, 7, 11, 17, 19, 23, 25, 29, 37, 39, 41

13: 19, 21, 22, 23, 25

Tentative Lecture Schedule

Week	Dates	Monday	Wednesday	Friday
1	Aug, Sept 30, 1, 3	Introduction Chemistry, Matter (Ch. 1)	Units, Measurements, Conversions (Let's Review)	Dimensional Analysis, Atoms (LR, Ch. 2)
2	Sept 6, 8, 10	LABOR DAY HOLIDAY	Atoms, The Periodic Table (Ch. 2)	Molecules, Ions (Ch. 2)
3	Sept 13, 15, 17	Compounds, Formulas (Ch. 2)	The Mole (Ch. 2)	Calculations, Compounds, Formulas (Ch. 2)
4	Sept 20, 22, 24	Chemical Equations (Ch. 3)	Exam I Chapters 1-2, 3?	Aqueous Solutions, Solubility (Ch. 3)
5	Sept, Oct 27, 29, 1	Net Ionic Equations, Aqueous Rxns (Ch. 3)	Reaction Stoichiometry (Ch. 4)	Limiting Reactant, Yield (Ch. 4)
6	Oct 4, 6, 8	Solution Concentration, Molarity (Ch. 4)	Chemical Analysis (Ch. 4)	Thermodynamics, Heat Transfer (Ch. 5)
7	Oct 11, 13, 15	MIDTERM BREAK	1 st Law of Thermodynamics Enthalpy (Ch. 5)	Hess's Law, Enthalpy & Reactions (Ch. 5)
8	Oct 18, 20, 22	Electromagnetic Radiation, Photons (Ch. 6)	Exam II Chapters 3-5, 6?	The Hydrogen Atom, Electrons (Ch. 6)
9	Oct 25, 27, 29	Atomic Orbitals (Ch. 6)	Atoms & Electrons (Ch. 6, 7)	Atomic & Ionic Electron Configurations (Ch. 7)
10	Nov 1, 3, 5	Periodic Trends (Ch. 7)	Valence Electrons, Chemical Bonding (Ch. 8)	Covalent Bonding, Lewis Structures (Ch. 8)
11	Nov 8, 10, 12	Lewis Structures, Molecular Shapes (Ch. 8)	Molecular Shapes (Ch. 8)	Polarity in Bonds & Molecules (Ch. 8)
12	Nov 15, 17, 19	Bond Properties (Ch. 8)	Exam III Chapters 6-8	Bonding Theory, Hybridization (Ch. 9)
13	Nov 22, 24, 26	Gases, Gas Laws (Ch. 11)	THANKSGIVING HOLIDAY	
14	Nov, Dec 29, 1, 3	Ideal Gases (Ch. 11)	Kinetic-Molecular Theory (Ch. 11)	Real Gases (Ch. 11)
15	Dec 6, 8, 10	Intermolecular Forces (Ch. 12)	Properties of Liquids, Solids (Ch. 12, 13)	Last Class! Phase Diagrams (Ch. 13)

Monday December 13, 9-11 am
FINAL EXAM Comprehensive: Chapters 1-9, 11-13