

Chemistry 101-021 – Fall 2008 Lecture Syllabus

- Course:** Chemistry 101, General Chemistry A
3 Credits: Lecture and discussion; focuses on the development of basic chemical principles.
- Lecture:** MWF 8:15-9:05 am Flanner Hall 133 Dr. Helquist
You must also be registered in one of the accompanying discussion sections:
- Discussion:** Tu 8:30-9:20 am Flanner Hall 7 Dr. Helquist
Tu 10:00-10:50 am Flanner Hall 7 Dr. Helquist
- Instructor:** Dr. Sandra Helquist
Email: shelquist@luc.edu – put “Chem 101-021” in subject line to receive a timely response
Phone: 773.508.3139
Office: Flanner Hall 422
Office Hours: M 2-3pm, W 10-11am, Th 2-3pm, or 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/Weaver, 6th 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 (owl.thomsonlearning.com & additional information/links posted on Blackboard). Access codes can be purchased as a package with your textbook from the bookstore or purchased separately online. Assignments will be due weekly. 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 for the lecture will be available on Blackboard (blackboard.luc.edu) and scores will be recorded 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.

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/depts/lac/disabilities>.

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. You may review the University guidelines from the academic catalog 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% is the lowest A-, 78% the lowest B-, 65% the lowest C-, 50% 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 (15% of your course grade) is expected to be earned by re-doing questions as necessary and learning from your mistakes via the instant feedback provided by the OWL program. Those 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 recommended by the instructor.

Quizzes

Quizzes include a variety of moderate 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 quiz score (15% of your course grade) 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 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, Monday Sept 15, Monday Oct 13, Wednesday Nov 12. If you miss a midterm for any reason, grading Option 2 will automatically be used to determine your grade.

Final: 2 hours, Monday December 15, 9-11am, **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 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 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 with correct answers shown will be posted in the display case by the elevators on 4th floor Flanner following each exam.

Study Strategies and Suggestions

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. Collaboration on homework problems and formation of study groups is encouraged, especially in a timely fashion. Experience dictates that positive outcomes (for exam 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/segment to be covered BEFORE lecture to improve lecture comprehension. After lecture, careful detailed re-reading of the chapter/segment 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.

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.

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. Learning the names of the elements or mathematically defining a nanometer, for example, is necessary so that we can all speak and understand the same language as we build up our foundations in chemistry.

Suggestions for exam success:

Exam scores (midterms and the final) account for 70% of your course grade and consist of multiple-choice questions ranging in difficulty from a simple definition or chemical formula to multi-step calculations combining several chemical equations and/or concepts.

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 problems in your head or in your calculator as you will not be able to find your errors; "one silly mistake" is all it takes.

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. Reading your textbook is important and 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. Prior to each midterm exam and the final, a practice (multiple-choice) test will be posted on Blackboard to further assist you in your studying. Test yourself "for real" to see how well you understand the material.

Pay attention to instructions given for each exam. You will be deducted points for failing to completely fill in your name and a 10-digit ID number, including the bubbles, on your answer sheet. You will also lose points if you fail to turn in your exam and score sheet to a proctor promptly when time is called. Only answers that appear on the answer sheet will be scored. Students will not receive credit for answers written on the exam pages. Also listen carefully for instructions/clarifications given by the instructor during the exam. If you have a question during an exam, raise your hand and a proctor will come to you.

When you are instructed to begin any exam, take a minute or two to look through all of the questions. Start by working the problems you are confident you can solve before moving on to questions for which you are unsure of how to begin. Do not spend too much time on any single question and prioritize your time where it will be well spent. Before time is called, check over your score sheet to make sure that you have an answer filled in for each question: there are no penalties for guessing.

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.

Recommended End-Of-Chapter Problems from your book: note that these are to be completed only for your own practice, not to be turned in for credit. All of the EOC problems are worthy of your time, however, if you do not have time to complete all of them, start first with these. If you want more practice in a particular topic, work the even numbered-problems in that section as well.

- 1: 7, 15, 25, 29, 35, 37, 47, 53, 63, 67, 89, 105, (more challenging: 93, 95, 101, 103)
 2: 1, 2, 3, 17, 23, 25, 31, 43, 45, 51, 53, 57, 59, 63, 67, 71, 77
 3: 3, 7, 17, 29, 33, 39, 43, 45, 55, 57, 59, 63, 65, 73, 77, 87, 91, 103, 107, 111 (81, 99, 101, 109, 115)
 4: 5, 11, 21, 25, 29, 31, 41, 45, 49, 51, 53, 59, 63, 65, 69, 73, 81, 83 (43, 61, 67, 71, 75, 79)
 5: 7, 23, 25, 29, 37, 41, 45, 51, 59, 63, 69, 71, 83, 89, 95, 101, 109, 113, 125 (73, 75, 91, 97, 111, 115, 123)
 6: 17, 23, 29, 45, 51, 55, 63, 67, 71, 75, 83, 89, 107, 109 (76, 77, 93, 103)
 7: 7, 9, 11, 13, 19, 25, 27, 33, 35, 45, 53, 55, 61, 65, 69, 71 (57, 62, 75, 76)
 8: 11, 15, 19, 23, 39, 43, 47, 51, 53, 55, 65, 67 (69, 71)
 9: 13, 15, 21, 23, 27, 35, 39, 41, 45, 51, 53, 57, 63, 65, 75, 77, 81, 83, 87, 89, 93, 97, 101
 10: 5, 7, 11, 23, 29b-e, 33, 35, 50, 51, 57 (27, 39, 49, 53)
 12: 13, 15, 19, 29, 35, 37, 41, 42, 59, 75, 79, 89, 91, 97, 99, 101 (55, 69, 73, 81, 85, 93, 103)
 13: 1, 3, 5, 7, 11, 13, 15, 17, 19, 31, 33, 37, 39, 41, 47, 53, 65, 67, 69, 75, 79

Tentative Lecture Schedule

Week	Dates	Monday	Wednesday	Friday
1	Aug 25, 27, 29	Introduction Chemistry, Matter (Ch. 1)	Units, Measurements, Conversions (Ch. 1)	Atoms (Ch. 2)
2	Sept 1, 3, 5	LABOR DAY HOLIDAY	The Mole (Ch. 2)	The Periodic Table (Ch. 2)
3	Sept 8, 10, 12	Molecules, Ions (Ch. 3)	Compounds, Formulas (Ch. 3)	Compounds, Formulas Equations (Ch. 3, 4)
4	Sept 15, 17, 19	Exam I Chapters 1-3	Chemical Equations (Ch. 4)	Reaction Stoichiometry (Ch. 4)
5	Sept 22, 24, 26	Limiting Reactant, Yield (Ch. 4)	Aqueous Solutions, Solubility (Ch. 5)	Reactions in Solution, Net Ionic Equations (Ch. 5)
6	Sept, Oct 29, 1, 3	Concentrations in Solution (Ch. 5)	Molarity & Stoichiometry (Ch. 5)	Thermodynamics, Heat Transfer (Ch. 6)
7	Oct 6, 8, 10	MIDTERM BREAK	1 st Law of Thermodynamics Enthalpy (Ch. 6)	Hess's Law, Enthalpy & Reactions (Ch. 6)
8	Oct 13, 15, 17	Exam II Chapters 4-6	Electromagnetic Radiation, Photons (Ch. 7)	The Hydrogen Atom, Electrons (Ch. 7)
9	Oct 20, 22, 24	Atomic Orbitals (Ch. 7)	Atoms & Electrons (Ch. 8)	Atomic & Ionic Electron Configurations (Ch. 8)
10	Oct 27, 29, 31	Periodic Trends (Ch. 8)	Valence Electrons, Chemical Bonding (Ch. 9)	Covalent Bonding, Lewis Structures (Ch. 9)
11	Nov 3, 5, 7	Lewis Structures, Molecular Shapes (Ch. 9)	Polarity in Bonds & Molecules (Ch. 9)	Bond Properties (Ch. 9)
12	Nov 10, 12, 14	Bonding Theory (Ch. 10)	Exam III Chapters 7-9	Hybridization (Ch. 10)
13	Nov 17, 19, 21	Gases, Gas Laws (Ch. 12)	Ideal Gases (Ch. 12)	Real Gases, Kinetic- Molecular Theory (Ch. 12)
14	Nov 24, 26, 28	Intermolecular Forces (Ch. 13)	THANKSGIVING HOLIDAY	
15	Dec 1, 3, 5	Liquids (Ch. 13)	Solids (Ch. 13)	Last Class! Phase Diagrams (Ch. 13)

Monday, December 15, 9-11 am, FINAL EXAM
Comprehensive: Chapters 1-10, 12, 13