

**General Chemistry 101 - Fall 2017**

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Lecture	Tu/Th 4:15-5:30 p.m.	Flanner Hall-Auditorium (Sect 023)
Discussion	Tu 5:45-6:35 p.m.	Flanner Hall-Auditorium (Sect 024)
	Th 3:00-3:50 p.m.	Sullivan Center-Galvin Auditorium (Sect 025)

Office Hours Tu: 2:30 p.m. – 4:00 p.m. & Th: 1:00 p.m. – 2:30 p.m.

*Required Text:* Brown, LeMay, Bursten, Murphy, Woodward Chemistry-The Central Science 13<sup>th</sup> Ed. ISBN 978-0-321-69672-4

*Required Online:* ALEKS (login information can be found under the resources tab in Sakai)

*1. Course Content & Objectives:* This course is the first in a two-semester sequence of general chemistry. We will focus on building a conceptual 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 and critical thinking. This will serve as a foundation for further study in chemistry, other sciences and related disciplines.

The student should learn how to:

1. Differentiate types of matter based on their chemical and physical properties (for example, pure substances vs. mixtures, metals vs. nonmetals, ionic vs. covalent vs. metallic, electrolyte vs. non-electrolyte).
2. Use multiple perspectives of matter (macroscopic, particle, symbolic levels) to qualitatively describe and explain characteristics, properties, and relationships of the following: atomic structure, nuclear chemistry, periodicity, molecular structure, chemical bonding, chemical reactions, thermochemistry, aqueous solutions, gases.
3. Quantify relationships between variables controlling chemical systems.
4. Solve quantitative multistep problems combining multiple concepts within the systems.
5. Differentiate among closely related factors, categorize problem types, and select appropriate tools to solve these problems.
6. Apply chemical principles to explain natural phenomenon.

*2. IDEA Objectives:* Chosen by the faculty for General Chemistry; also apply across other courses and disciplines.

1. Gaining a basic understanding of the subject (e.g., factual knowledge, methods, principles, generalizations, theories)
2. Learning to *apply* course material (to improve thinking, problem solving, and decisions)
3. Gaining a broader understanding and appreciation of intellectual/cultural activity (music, science, literature, etc.)
4. Learning how to find, evaluate, and use resources to explore topics in depth

### 3. Quizzes, Exams, and Grading:

A total of six 30-minute quizzes will be given during the discussion section. Each quiz will consist of 5 free response questions for a total of 20 points per quiz. The lowest of your six quiz grades will be dropped. If you miss a quiz, that is the quiz that will be dropped. **No make-up quizzes will be given under any circumstances.**

There are three 75-minute mid-term exams and one 2-hour final exam. The lowest of the three mid-term exams will be dropped. If you miss an hourly exam, than that is the exam that will be dropped. **No make-up mid-term exams will be given under any circumstances.** The final exam is cumulative and cannot be dropped. A calculator may be used on all exams and quizzes. However, all memory will be cleared from the calculator before each exam.

ALEKS	10%	
Quizzes	15%	(Best five out of six quizzes)
Mid-term exams	40%	(Best two out of three mid-term exams)
<u>Final Exam</u>	<u>35%</u>	
TOTAL	100%	

You must bring a form of photo identification, such as your Loyola Student ID or your driver's license, with you to the exam. During exams, you will be required to leave your books, backpacks, notebooks, etc. at the front of the room. All exams are closed book and closed notes unless otherwise noted. When you are finished with your exam, please bring your completed exam to the front, and leave the room quietly without disturbing the other students.

Exams will be graded and returned to you as quickly as possible, usually by the following week. All grading questions, points of clarification, and grading errors must be brought to the instructor's attentions during office hours no later than one week after return of the exam.

The grading scale used to determine letter grades are as follows: **A** 100 – 93, **A-** 92 – 86, **B+** 85 – 82, **B** 81 – 78, **B-** 77 – 74, **C+** 73 – 70, **C** 69 – 65, **C-** 64 – 62, **D** 61 – 50, **F** < 50.

Students wanting to drop lecture after midterm may stay in the co-req lab only if lecture midterm grade, posted in LOCUS, is a D or better. Students should continue to attend lecture until the week of the drop date to gain as much background knowledge as possible. For Fall 2017 students wishing to drop lecture, and have a mid-term grade of D or better, can seek assistance from the Department of Chemistry and Biochemistry office beginning Monday 10/30 at 9:00am through Friday 11/3 at 4:00pm. Students with a midterm grade of F must drop the co-req lab along with the lecture. **No exceptions.**

### 4. Exam Dates (subject to change):

Tuesday, September 19, 2017:	<b>Mid-term Exam 1</b>
Thursday, October 26, 2017:	<b>Mid-term Exam 2</b>
Thursday, November 30, 2017:	<b>Mid-term Exam 3</b>
Tuesday, December 12, 2017:	<b>Final Exam, 4:15-6:15 p.m.</b>

5. *Quiz Dates (subject to change):*

Tuesday & Thursday, September 12 & 14, 2017	<b>Quiz 1</b>
Tuesday & Thursday, October 3 & 5, 2017	<b>Quiz 2</b>
Tuesday & Thursday, October 17 & 19, 2017	<b>Quiz 3</b>
Tuesday & Thursday, November 7 & 9, 2017	<b>Quiz 4</b>
Tuesday & Thursday, November 14 & 16, 2017	<b>Quiz 5</b>
Tuesday & Thursday, December 5 & 7, 2017	<b>Quiz 6</b>

6. *ALEKS Homework:* There will be ALEKS homework sets assigned on Tuesday and Thursday night after each class. Tuesday's assignment will be due at 11:59 p.m. on Friday, and Thursday's assignment will be due on Monday at 11:59 p.m.

Pie Progress	50% of ALEKS grade
Objective	45% of ALEKS grade
Scheduled Knowledge Check	5% of ALEKS grade

Intermediate Objectives: you'll be expected to reach certain "mileposts" in your mastery of the entire curriculum at certain dates. ALEKS will keep track of this in objectives due on Fridays and Mondays, and report it to your instructor. The purpose of this is, frankly, to keep you working regularly. We know it is human nature to procrastinate if given the chance, but these objectives will help you come prepared for every class. Check the Gradebook for your score on this metric. At the end of the semester, your two lowest scores on these objectives will be dropped to allow for unavoidable circumstances (illness, family emergencies, etc). The Prerequisite Review (extra credit) counts as the first intermediate objective.

Final Knowledge Check: you'll be taking several knowledge checks during the term, after selected intermediate objectives. Most of these will not count toward your grade: only the Final Knowledge Check due on the last day of class will appear in the gradebook.

Final Pie Mastery: the remainder of your homework grade will be determined just by your overall level of mastery at the end of the class -- how many topics ALEKS says you've mastered. The purpose of this is, first, to give you credit for mastery whenever it is achieved, even if it's achieved well after the initial deadline. It is also to give you a strong motive for restoring topics to your mastery list that you may lose on re-assessment. We don't want you forgetting what you learned in Week 1 by the time you get to Week 15. That would result in a sad experience on the final exam. Look at the numerator on the fraction above the ALEKS pie for your score here. The due date for filling in your pie is the night before the final exam is given.

7. *Norms of Course Proceedings:* The classroom is to be a safe place to question and explore ideas. Student and teacher voices are important to this work. Collegial disagreement can be a healthy part of this process, but must always include respect for all members of the class.

Course activities will be designed to help students reach the goal of learning chemistry content and developing critical thinking skills. This will more often be driven by the use of data and reasoning to discover concepts and solutions rather than the identification and exchange of chemical facts and algorithms.

**Students are expected to read individually on their own time outside of class.**

Class sessions will begin and end on time. All students should attend class regularly and participate in class discussions. Absences could affect one's ability to learn chemistry during this session. Anticipated absences should be discussed with the instructor two class days before the absence. Proper documents may be

requested to verify the reason for any absence. No make-up exams or quizzes will be granted for any absence during an exam or quiz day, **no matter what the excuse.**

6. *Discussion:* The discussion section will be devoted to working on discussion hand-outs. At the beginning of the semester, students will be paired off into permanent discussion groups of two. At the beginning of every discussion class, a worksheet with questions relevant to the topics covered in class will be handed out. Discussion groups will be chosen at random and then have an opportunity to explain to the class their answer for a question, and earn 4 participation points. When chosen, a group will have the option to “pass” on a question. If a group is called and is not available to answer the question assigned, this will also count as a “pass” for the group. The answer to the question does not have to be the correct answer to earn the participation points. A total of 20 participation points can be earned throughout the semester.

8. *Sakai Materials:* Handouts given in class will be mirrored on Sakai.

9. *Academic Honesty:* All students in this course are expected to have read and abide by the demanding standard of personal honesty, drafted by the College of Arts & Sciences, that can be viewed at:

[http://www.luc.edu/cas/pdfs/CAS\\_Academic\\_Integrity\\_Statement\\_December\\_07.pdf](http://www.luc.edu/cas/pdfs/CAS_Academic_Integrity_Statement_December_07.pdf)

Anything that you submit that is incorporated as part of your grade in this course (e.g. quiz, examination, homework, lab report) must represent your own work. Any students caught cheating will, at the very minimum, receive a grade of “zero” for the exam that was submitted and this grade cannot be dropped. If the cheating occurred during a course exam, the incident will be reported to the Chemistry Department Chair and the Office of the CAS Dean. Depending on the seriousness of the incident, additional sanctions may be imposed.

10. *Strategies and Suggestions:*

- The best method of learning chemistry is to work the assigned problems and write out the answers. *Then* check your answers versus the Answer Key.
- Study at least 10 hours per week and maintain a steady pace of studying. Chemistry continually builds, like a language, so studying some every day is most effective.
- Skim the current chapter before the corresponding lecture, so that you will be aware of the topics to be covered.

11. *Practices for Success:* Supporting claims with evidence, making applications, solving and analyzing problems, and using chemical principles to explain phenomena are critical skills in the field of chemistry. The development of these skills is not without some frustration, but it carries the reward of deepening one’s ability to think critically and solve problems in any field. The use of targeted, guiding questions, regularly scheduled work, and strategic study plans can greatly assist the learning of chemistry. With such a focus, hopefully any frustration will quickly turn to appreciation and fascination for the relevance and connectedness of chemistry in your life and within the world around you. Solving and analyzing problems is the most important feature of this work. If, at any time, you need assistance framing such plans for your work in chemistry, please do not hesitate to ask the instructor.

12. *Tutoring:* The tutoring Center at the university offers free tutoring to students. To see the complete tutoring schedule and find additional information, visit the Tutoring Center webpage at [www.luc.edu/tutoring](http://www.luc.edu/tutoring)

13. *Office Hours:* My office door will be open per the times listed. Please use this time to if you have extra questions regarding this course. If you are unavailable to meet at the listed times, please feel free to email me with any questions. However, if you email me at night (after 6:00 p.m.), on weekends, or during holiday breaks I will respond to your email as soon as possible. I will only reply to emails sent from Loyola email accounts. Please include your class and section number in the email subject line.

*14. Students with Disabilities Policy:* Eligibility for services is determined on an individual basis based on documented need. Self-disclosure and the submission of documentation can be initiated anytime during the year. However, reasonable time must be allowed before the student can expect accommodations to be in place. Self-disclosure and documentation are required only if students plan to request accommodations. Students should provide information and documentation at a reasonably early date to allow time for the development and arrangement of appropriate accommodations. In some cases, several weeks' advance arrangement is needed. Accommodations cannot be retroactive. Accommodations begin only after documentation is received and reasonable time for accommodation development has been allowed.  
<http://www.luc.edu/sswd/index.shtml>

*15. Harassment (Bias Reporting):* It is unacceptable and a violation of university policy to harass, discriminate against or abuse any person because of his or her race, color, national origin, gender, sexual orientation, disability, religion, age or any other characteristic protected by applicable law. Such behavior threatens to destroy the environment of tolerance and mutual respect that must prevail for this university to fulfill its educational and health care mission. For this reason, every incident of harassment, discrimination or abuse undermines the aspirations and attacks the ideals of our community. The university qualifies these incidents as incidents of bias.

In order to uphold our mission of being Chicago's Jesuit Catholic University-- a diverse community seeking God in all things and working to expand knowledge in the service of humanity through learning, justice and faith, any incident(s) of bias must be reported and appropriately addressed. Therefore, the Bias Response (BR) Team was created to assist members of the Loyola University Chicago community in bringing incidents of bias to the attention of the university. If you believe you are subject to such bias, you should notify the Bias Response Team at this link: <http://webapps.luc.edu/biasreporting/>

*16. Course Repeat Rule:* Effective with the Fall 2017 semester, students are allowed only THREE attempts to pass Chemistry courses with a C- or better grade. The three attempts include withdrawals (W). After the second attempt, the student must secure approval for a third attempt. Students must come to the Chemistry Department, fill out a permission to register form or print it from the Department of Chemistry & Biochemistry website: <http://www.luc.edu/chemistry/forms/> and obtain a signature from the Undergraduate Program Director, Assistant Chairperson, or Chairperson in Chemistry. A copy of this form is then taken to your Academic Advisor in Sullivan to secure final permission for the attempt.

**General Chemistry 101 Tentative Lecture Schedule (subject to change)**

8-29	1	Introduction: Matter and Measurement
8-31	1/2	Introduction: Matter and Measurement/Atoms, Molecules, and Ions
9-5	2	Atoms, Molecules, and Ions
9-7	3	Stoichiometry: Calculations with Chemical Formulas and Equations
9-12	3	Stoichiometry: Calculations with Chemical Formulas and Equations
9-14	3	Stoichiometry: Calculations with Chemical Formulas and Equations
9-19	--	<b>EXAM I (Chapters 1-3 or as announced)</b>
9-21	4	Reactions in Aqueous Media
9-26	4	Reactions in Aqueous Media
9-28	4/5	Reactions in Aqueous Media/Thermochemistry
10-3	4	Reactions in Aqueous Media
10-5	5	Thermochemistry
10-10	--	<i>Fall Break (no class)</i>
10-12	5	Thermochemistry
10-17	5/6	Thermochemistry/Electronic Structure of Atoms
10-19	6	Electronic Structure of Atoms
10-24	6	Electronic Structure of Atoms
10-26	--	<b>EXAM II (Chapters 4-6 or as announced)</b>
10-31	21	Nuclear Chemistry
11-2	21	Nuclear Chemistry
11-7	7	Periodic Properties of the Elements
11-9	7	Periodic Properties of the Elements
11-14	8	Basic Concepts of Chemical Bonding
11-16	8	Basic Concepts of Chemical Bonding
11-21	9	Molecular Geometry and Bonding Theories
11-23	--	<i>Thanksgiving Break (no class)</i>
11-28	9	Molecular Geometry and Bonding Theories
11-30	--	<b>EXAM III (Chapters 21 &amp; 7-9 or as announced)</b>
12-5	10	Gases
12-7	10	Gases
12-12	--	<b>Cumulative Final Exam, Flanner Hall-Auditorium Tuesday, December 12, 4:15-6:15 p.m.</b>