GENERAL CHEMISTRY FOR ENGINEERS
CHEMISTRY 171 SECTION 1
FALL 2020

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Office Hours: 9:30 to 11:30 AM Monday and 2-4 PM Wednesday or by appointment.

Purpose of Course: To acquaint students with fundamental concepts of chemistry and their application in engineering science.

Textbooks: "Chemistry for Engineering Students", 4th edit. by Larry Brown and Tom Holme (Cengage Learning, Inc.) ISBN 978-1-337-79890-9 is required. The Student Solutions Manual with Study Guide, ISBN 978-1-337-39906-7 is recommended.

Lecture Notes: Lecture notes/Handouts for each chapter will be made available electronically. Students are expected to take notes with calculations, chemical equations, and structures in the handouts as the lectures proceed. When set of notes is completed for a Chapter, a completed version will be posted in Sakai.

Other Materials: You will need an inexpensive calculator having logarithmic (base 10 and base e), exponential, and trigonometric functions. Be sure you are familiar with your calculator and that it is in user-ready condition for quizzes and exams. **Calculators cannot be shared during exams and the covers must be removed while taking the exam. You are not allowed to have a cell phone during the exam.**

Class Procedures: All sections of this class will meet online for lecture on Monday, Wednesday, and Friday from 8:10 to 9:00 AM online. Discussion sections will be held from 9:30 AM to 10:20 AM on Wednesday online as well. All lectures and discussions will be delivered via Zoom. A discussion worksheet will be provided via Email prior to the beginning of each discussion period. The instructor will demonstrate the first problem or a selected problem on the worksheet for the class. Then you will be expected to complete the worksheet problems (you may work together) and email them to me at the end of the session. These will not be graded. Students need not hand in perfect worksheets but must make a good faith effort to complete the assignment to get full credit. Completed discussion sheets will be posted on Sakai prior to the upcoming exam.

In this class software will be used to record live class discussions. As a student in this class, your participation in live class discussions will be recorded. These recordings will be made available only to students enrolled in the class, to assist those who cannot attend the live session or to serve as a resource for those who would like to review content that was presented. All recordings will become unavailable to students in the class when the Sakai course is unpublished (i.e. shortly after the course ends, per the Sakai administrative schedule). Students who prefer to participate via audio only will be allowed to disable their video camera so only audio will be captured. Please discuss this option with your instructor. Both lecture and discussion recordings will be made available to

students enrolled in Chem 171 through Panopto on the Sakai site for the course.

Privacy Statement Assuring privacy among faculty and students engaged in online and face-to-face instructional activities helps promote open and robust conversations and mitigates concerns that comments made within the context of the class will be shared beyond the classroom. As such, recordings of instructional activities occurring in online or face-to-face classes may be used solely for internal class purposes by the faculty member and students registered for the course, and only during the period in which the course is offered. Students will be informed of such recordings by a statement in the syllabus for the course in which they will be recorded. Instructors who wish to make subsequent use of recordings that include student activity may do so only with informed written consent of the students involved or if all student activity is removed from the recording. Recordings including student activity that have been initiated by the instructor may be retained by the instructor only for individual use.

Homework Problems: Students who expect to do well on the quizzes and exams should be able to the assigned problems at the end of the chapters in the book. Representative problems will be demonstrated in lecture and worked out in the discussion sections. Students must understand the concepts behind the problems. Students who can do the indicated problems at the end of the chapters, discussion sheets, and understand concepts covered in class should have no problem with the tests.

Exams, Discussion Assignments, and Grading: The total grade for the course is based on five 1-hour exams given over the course of the semester, discussions, and one final. Your lowest 1-hour exam score will be dropped. If you miss an exam due to illness or some other reason, this will be your dropped grade. If you miss another exam, then you must have a valid excuse (doctor's note) to have a make-up exam arranged. Each of the five hour exams is worth 16% of your grade (best four is 64% of total). The final is worth 26% of your total grade. Discussions are 10% of your total grade. Exams and discussions will be provided and submitted with gradescope. You will need to acquire this software (free of cost).

Grading Scale: The following scale will be used to determine letter grades **A** 100-93; **A-** 92-89; **B+** 88-85; **B** 84-81; **B-** 80-77; **C+** 76-73; **C** 72-69; **C-** 68-65; **D** 64-53; **F** <52.

Exams and Academic Honesty: Academic dishonesty of any sort will not be tolerated. Students caught cheating on an exam or who have someone else take it for them will receive an F grade for the course.

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).

TENTATIVE CLASS SCHEDULE

Date	Day	Topic	Chapter
8/24	M	Introduction, Atoms and Molecules	1,2
8/26	W	Atoms and Molecules	
8/28	F	Balancing Chemical Equations	2
8/31	M	Chemical Bonds	
9/2	W	Limiting Reagent, Ions in Solution	2
9/2	W	Discussion I: Balancing Equations	2,3
9/4	F	Ions in Solution	3
9/7	M	No class, Labor day	3
9/9	W	Reactions in Solution	3
9/9	W	Discussion II: Mole-Mass and Volumetric Calculations	3
9/11	F	Exam 1 Chapters 2 and 3	
9/14	M	Reaction Stoichiometry	4
9/16	W	Reaction Stoichiometry	4
9/16	W	Discussion III: Reaction Stoichiometry	4
9/18	F	Ideal Gas Law	5
9/21	M	Kinetic Theory and non-Ideal Gases	5
9/23	W	Gas Law Calculations	5
9/23	W	Discussion IV: Gas Law Calculations	4,5
9/25	F	Exam II Chapters 4 and 5	
9/28	M	Electron Configurations of Atoms	6

9/30	W	Electron Configurations of Atoms	6
9/30	W	Discussion V: Electron Configurations	6
10/2	F	Periodic Trends in Atomic Properties	6
10/5	M	Ionic, Covalent bonds and Lewis Structures	7
10/7	W	Hybrid orbitals and Molecular shapes	7
10/9	F	Drawing Lewis Structures	7
10/12	M	Exam 3: Chapters 6 and 7	
10/14	W	Molecules and Materials	8
10/16	F	Molecules and Materials	8
10/19	M	Intro to Thermochemistry, First Law	9
10/21	W	First Law of Thermodynamics	9
10/21	W	Discussion VI: Molecules and Materials	
10/23	F	Hess's Law	9
10/26	M	Calorimetry	9
10/28	W	Calorimetry	9
10/28	W	Discussion VII: Calorimetry and Hess's Law Calculations	9
10/30	F	Exam 4: Chapters 8 and 9	
11/2	M	Spontaneous Chemical Reactions and Entropy	10
11/4	W	Second Law of Thermodynamics	
11/4	W	Discussion VIII: Spontaneous Reactions	10
11/6	F	Gibbs free energy and Chemical	10,11

		Reactions, Rate Laws	
11/9	M	Rate Laws of Chemical Reactions	11
11/11	W	Temperature, Reaction Rates, and Catalysis	11
11/11	W	Discussion IX: ΔG and Chemical Kinetics	10,11
11/13	F	Exam 5: Chapters 10 and 11	
11/16	M	Chemical Equilibrium, LêChatlier's principle	12
11/18	W	Chemical Equilibrium and Equilibrium Constants; LêChatlier's principle	12
11/18	W	Discussion X: Chemical Equilibrium	12
11/20	F	Acid-Base Equilibria	12
11/23	M	Acid-Base and Solubility Equilibria	12
11/25	W	Thanksgiving Break	
11/27	F	Thanksgiving Break	
11/30	M	Redox Reactions and Galvanic Cells	13
12/2	W	Nernst Equation	13
12/2	W	Discussion XI: Electrochemistry	13
12/4	F	Corrosion, Batteries, and Electrolysis	13

Final Exam

The University sets the schedule for all final exams. The final will be held on:

Thursday 12/10 9-11 AM

The exam will be emailed to you as per the other exams. There will be no make-up final exams given under any circumstance, and the exam will not be given early, either.

Student Accommodations

If you have any special needs, please let me know in the first week of classes. The university provides services for students with disabilities. Any student who would like to use any of these university services should contact the Student Accessibility Center (SAC), Sullivan Center, (773) 508-3700. Further information is available at http://www.luc.edu/sac/.