



General Chemistry for Engineering Students

Chemistry 107 Section 507

MW 5:45 pm - 7 pm, Heldenfels Hall 200

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Office Location 104 Heldenfelds

Office Hours: M: 9-10 am 2:30-3:30 pm W: 9-10 am R: 6:30-7:30 pm F: 10-11 am 1-2 pm

Other times by appointment

Office Phone: (979) 845-3474

1 Course Description

Welcome to CHEM 107.

This course is intended to provide engineering students with a background in important concepts and principles of chemistry. (A few non-engineering majors, including physics and geophysics, also require this course.) Emphasis will be placed on those areas considered most relevant in an engineering context, and practical applications in engineering and technology will be examined.

In designing this course, we considered carefully the various reasons why engineering students should learn chemistry, and tried to express them as specific learning objectives. Many of these objectives deal with particular topics or skills. Though some of the most important objectives pertain to a more general understanding of chemistry. These goals deal with the overall relationship between chemistry (or science in general) and engineering rather than with the details of any particular chemical principle. Upon successful completion of this course the student will be able to:

- Use their knowledge of molecular structures and properties to describe and solve real world problems.
- Explain the relationship between experimental observations and chemical principals and theories.
- Use problem solving skills to quantitatively evaluate a chemical system and to describe chemical equilibrium, thermochemistry and reaction kinetics.
- Understand the theoretical basis for atomic structure, chemical bonding and molecular structure.

Prerequisite(s): Concurrent enrollment in Chem 117

Credit Hours: 3.000.

Text(s): *Chemistry for Engineering Students*, 3rd Edition

Author(s): Brown and Holme

Hardback ISBN-13: 978-1285199023

Loose Leaf ISBN-13: 978-1305256675

e-book ISBN-13: 978-1-305-59965-9

2 REQUIRED MATERIALS

2.1 Calculator

An approved calculator suitable to use on lecture exams. Calculators may not have alphabetic or extensive memory. Details can be found in 5.4.

2.2 Homework: Aleks and OWL

You might ask: why are there two homework systems? It is because each has a separate purpose. OWL homework is designed to follow the book very closely and give you the opportunity to learn the material through interactive videos and challenge problems. Aleks is an assessment of your mastery of the material. Generally, I suggest you complete the OWL homework before attempting the Aleks homework. Homework **MUST** be turned in on time. Ultimately, the purpose of homework is to prepare you for exams. **Homework will be due every week, do not let yourself fall behind!**

2.3 Textbook and OWL

The textbook and OWL homework are combined. We are using *Chemistry for Engineering Students*, 3rd Edition ISBN-13: 978-1-305-59965-9. The combo includes OWL access and a loose leaf version of the textbook for (\$61) and can be found here: <http://www.owlv2.com/107.html>. At this website, use the "purchase" button, then register for our section using the code below. I would recommend that you **RETURN WHAT YOU HAVE IF YOU PAID MORE THAN \$100 FOR IT!** There will also be a help desk to give you help with purchasing and /or registering in 104 HELD during the first week or two of class. Our course key is: **E-HY7W656AKRASN**.

2.4 Aleks Homework

Aleks is the second on-line homework we will be using. Follow the steps on their web site and enter our class code: **VTTRE-MRJVD**, then select the access length 180 days for \$42.75 or 360 days for \$53.25. If Chem 107 is your only required chem course I suggest the 180 day access. Aleks homework is termed objectives on their website. There are 13 objectives (one for each chapter) in total for the semester, if you complete the current objective before the due date you can start on the next objective. **WARNING: Do not try to bypass assessments by hitting the "I havent learned this yet" button for all of your questions. This will result in an empty pie and you will have to redo ALL of the topics in order to get them back.**

2.5 i>Clicker2

You have two options for i>Clicker2: There is the new version with reef polling that is the university approved. ISBN: 9781498601634. It costs \$56.00 new or \$43.10 used. The older version: ISBN-9781429280471. Both have no cost to register your clicker into a course. We will not use the reef polling, but you might need the new for other classes. Once you buy the clicker, you can use it for all your courses that require i>Clickers for the remainder of your time at Texas A & M. You can also resell it. There are options to rent, but these are almost the same price as to buy. Two students can share a clicker as long as they are not in the same class. You can purchase your i>Clicker2 at the Texas A & M Bookstore and other bookstores.

You will need to register your clicker for the class. You can register at: <https://www.iclicker.com/remote-registration-form-for-classic>. Be sure to use your UIN, TAMU ID number, without any spaces or dashes. You will need to use it once in class to complete your registration.

3 Lecture

Lectures are designed to help you in developing an understanding of the material being emphasized. To get the most out of lecture, one should always keep up with the assigned reading (refer to the tentative schedule at the end of the syllabus).

3.1 Lecture Schedule

There is a tentative schedule at the end of this syllabus. Topics and chapter references are subject to change. Special announcements and schedule changes will be announced at the beginning of the lectures.

3.2 Lecture Attendance

I will not be taking attendance as such throughout the semester. However, to encourage you to attend class, there will be clicker points that will account for part of your lecture grade (See grades below). You should ATTEND ALL CLASSES.

4 Grade Distribution

Online Reinforcement Module	45 points	5.03%
Clicker Polling (75% required for full points)	50 points	5.59%
OWL Homework (Best 10 each 8 points)	80 points	8.94%
ALEKS (Objectives 75% Pie Mastery 25%)	90 points	10.06%
Assignments (Best 5 each 6 points)	30 points	3.35%
Exams 1	100 points	11.17%
Exams 2	150 points	16.76%
Exams 3	150 points	16.76%
Comprehensive Final	200 points	22.34%
Total	895 points	100.00%

4.1 Letter Grade Distribution

Below is the tentative grade distribution, any curving of grades is at the lecturer's discretion.

Points Earned	Assigned Letter Grade
≥ 805	A
716 - 804	B
626 - 715	C
537 - 625	D
≤ 536	F

4.2 Clicker Polling

During the semester, you answer will questions during lecture. These will be done both individually and in groups during class. Some may be quiz-like, in that there is a 'correct' answer, others may be opinion based. I DO NOT expect you to get these all correct, so I only require 75% of the clicker points for FULL course credit. There are NO makeup clicker assignments, as the lower percent required should take care of necessary absences, forgotten clickers (bring your clicker to each class), or bad batteries. Clicker points will be posted frequently. You only have 2 weeks to notify me if you believe there is an error in your points. Clicker points will be transformed into course points at the end of the semester using this scheme:

Percent of Possible Clicker Points	Course Points Awarded
$\geq 75\%$	50
70% - 75%	48
65% - 69%	46
60% - 64%	44
55% - 59%	41
50% - 54%	38
45% - 49%	37
40% - 44%	34
35% - 39%	31
30% - 34%	28
25% - 29%	25
<25	0

4.3 Online Reinforcement Module

This module is worth 45 points of your overall course grade. All students will be eligible for full credit by completing the online assignments associated with the Reinforcement Module, even if they scored poorly on the initial assessment. This means that you do not have to do well on the assessment, only that you need to complete the assessment and the associated assignments from the Reinforcement Module to receive the total 45 points towards your course grade. The videos and workbook will continue to be available throughout the semester. The link to eCampus is <http://ecampus.tamu.edu> and the assessment and module can be found in **My Organizations**. The initial due date for the assessment and online assignments is 5:00 pm on Friday, August 25th, with a final deadline of 5:00 pm on Friday, September 8th

4.4 Assignments

Each assignment will be worth 6 points. The best 5 assignments will count. There will be at least 7 assignments in total. These may be in various formats (written, clicker, on-line). Some may be UNANNOUNCED in class quizzes, others will be on-line. There are no make-ups for assignments; if you miss one, it will be one you drop. On-line and out-of-class assignments can have their due date extended for university-approved absences.

4.5 OWL Homework

Homework problems will be assigned for each topic of study. The textbook problems are for your practice. Approximately 13 sets of homework will be assigned in OWL for credit. Each set of homework will have multiple parts and together will be worth 8 points. The best 10 homework

assignments will be included towards course points for a total of 80 points for the semester. Additional details will be given in class. Course points for each homework set will be assignment will be calculated with the following equation rounded to the nearest point:

$$\text{Course Points} = \frac{\text{Homework Set Score}}{\text{Possible Score}} * 8\text{Points} \quad (1)$$

Example: for homework set score of 8 for 10 possible, 6 course points will be awarded.

4.6 ALEKS Homework

ALEKS homework consists of two different parts, 13 objectives (one for each chapter) and pie mastery. The ten best objective scores and percent of pie mastery will be used to compute your ALEKS grade. The objectives will count for 75% of the total score (average of your ten best objective scores) and the pie mastery will count for 25%.

4.7 Lecture Exams

These are three 75-minute exams given during the regular lecture times. Most of the questions will be multiple choice however they may be some free response questions. You **MUST** have a Photo I.D. in order to take exams, you should bring an approved calculator, and a scantron will be provided for multiple choice questions.

4.8 Comprehensive Exams

The Final Exam will be a 2-hour, 200-point exam covering all the chapters taught during the semester. The final will be **COMPREHENSIVE**. The final is scheduled for Friday December 8th, 2017 from 7:30 - 9:30 AM in HELD 200. Please do not expect to take the final exam at any time other than the scheduled time **FOR YOUR SECTION**, unless you have made arrangements with me. You must bring a **PHOTO I.D.** to the Final Exam. Do not be **LATE**; as soon as the first person has left the final, no one will be allowed to begin the final.

5 Lecture Exams and Comprehensive Final

There will be three lecture exams (Exams 1, 2, and 3) given on the days indicated on the Calendar. Additionally, there will be a Final Exam. These exams may be all multiple choice or include combination of multiple choice questions that will be machine graded and non-multiple choice questions that will be hand graded.

5.1 Assigned Seating

Check the exam seating assignment on the bulletin board outside Room 200 HELD one day in advance. They will also be posted on the classes ecampus site. Each exam has a different seating assignment.

5.2 Expectations

Arrive to the exam on time. Cheating or bringing in material with intent to cheat will result in a zero for the exam or a more severe penalty. Follow the directions given to you as you enter the exam room. Do not write on the back of the scanner sheet. Failure to follow these directions may

result in a withheld or zero grade. In addition, note that the answers have to be recorded on the standard gray scanning sheet to be graded. During the exam, keep all work covered as much as possible. Talking or looking around the room will result in a withheld grade for the exam. Work carefully, but you must finish in the allotted time; exams handed in late will not be graded. You will be able to see your grades on the web. Details are below.

5.3 Photo ID

Bring to the exam at least two sharpened #2 pencils, an eraser, and a PHOTO I.D. (your TAMU I.D. card or a drivers license will work). Pencil sharpeners and calculators (with certain restrictions) may also be brought. There must be NO "sharing" of calculators during an exam. Any other items must be "enclosed" out of sight in a briefcase, attache case, satchel, messenger bag, tote bag, saddle bag, garbage bag, back pack, purse, or sack, and stored under your assigned seat.

5.4 Calculator

Students cannot use calculators that are programmable or have alpha-numeric capabilities for the exams. You want a scientific calculator under \$15 (e.g. Casio FX-260 or TI-30X). Check with me if you have any questions. Any student attempting to use an unacceptable calculator will receive a zero for the exam plus other penalties.

5.5 Special Seating

For special seating requests such as a left-handed seat or a table sign up at the beginning of the semester on forms I bring to class or go to room 412 HELD. You only need to turn in one request for the semester.

5.6 Concerns About Exam Grading

If you believe that your exam is misgraded, you need to fill out a regrade form. These are available in room 412 HELD. Fill the form out and turn it in to room 412 HELD. Additionally, if you wish to review your exam, you must do so prior to the next exam.

5.7 Make-up Lecture Exam

For students who have university-excused absences and who also notify me (the instructor) within two academic days (M, T, W, R, & F), a make-up test will be arranged. I require a written statement about the excuse for the absence. The make-up exams will be at least as difficult as the regular exams. The time for the makeup exam will be set after the 2-day signup period, from student schedules. Makeup exams are scheduled within a week of the regular exam. Makeup exams are free response, but you can get partial credit on each problem; they cover the same material and objectives.

6 Posting Grades

All scores will be posted on the class's eCampus site, it will be updated regularly. Any "dropped" scores will be done at the end of the semester and a new score containing the best X will be shown. It is your responsibility to inform your instructor if you believe a score is incorrect. **Exams will not be returned.** Students may visit their exams during office hours up until the next exam (i.e.

you can see exam 1 until exam 2 is given). Projecting, calculating or predicting final letter grades is the student's responsibility.

7 Tutoring

Texas A & M University offers free tutoring through the academic success center <http://successcenter.tamu.edu/Tutoring/> and multicultural services <http://dms.tamu.edu/academics/peer-tutoring/>. The chemistry department has a chemistry help desk in HELD 406 Monday-Wednesday 8 am-6 pm and Thursday-Friday 8 am - 5pm (TA not always present). The college of engineering also offers tutoring <http://engineering.tamu.edu/programs/eh> and <http://engineering.tamu.edu/easa>.

8 Academic Dishonesty

Students are expected to be the sole source for any work submitted in their name. The utilization or submission of work of others is a violation of Texas A & M University scholastic dishonesty policies and disciplinary steps will be taken. Only authorized electronic or printed materials or equipment may be used in or near the classroom. As commonly defined, plagiarism consists of passing off as ones own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research and knowledge cannot be safely communicated.

Study groups can be a valuable aid to learning. Within the group you should discuss your answers to homework problems. Your group can discuss questions with other groups. Quizzes, exams and the final must be done on your own, unless otherwise specified by the instructor. Academic dishonesty will not be tolerated in any form and will be reported to the proper university officials. Expulsion for academic dishonesty does not look good on one's permanent record and is not worth the points you are trying to gain by cheating. If you have questions regarding plagiarism, please consult the latest issue of the Texas A & M University Student Rules, under the section Scholastic Dishonesty.

The Aggie Honor Code is: An Aggie does not lie, cheat, or steal or tolerate those who do. Please review the Honor Council Rules and Procedures on the web: <http://aggiehonor.tamu.edu> Reports of academic dishonesty will be filed for those who fail to follow the code.

9 Texas A & M Services for Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, either temporary (e.g. broken arm) or permanent (including a learning disability), please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit <http://disability.tamu.edu>. If you have any questions, see me.

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Week	Content	
Week 1	Mon Aug. 28 Chapter 1 Syllabus and Problem Solving in Chemistry 1.1-1.6	Wed Aug. 30 Chapter 2 Atoms and Molecules 2.1-2.3
	Week 2	Mon Sept. 4 Chapter 2 The Periodic Table 2.4-2.7
Week 3	Mon Sept. 11 Chapter 3 Chemical Equations 3.4-3.6	Wed Sept. 13 Exam 1 *****
	Week 4	Mon Sept. 18 Chapter 4 Stoichiometry 4.1-4.2
Week 5	Mon Sept. 25 Chapter 5 Gases 5.1-5.3	Wed Sept. 27 Chapter 5 Gas Laws 5.4-5.6
	Week 6	Mon Oct. 2 Chapter 6 Atomic Spectra 6.1-6.3
Week 7	Mon Oct. 9 Chapter 7 7.1-7.4 Chemical Bonding	Wed Oct. 11 Exam 2 *****
	Week 8	Mon Oct. 16 Chapter 7 Molecular Structure 7.5-7.8
Week 9	Mon Oct. 23 Chapter 8 Intermolecular Forces 8.4-8.6	Wed Oct. 25 Chapter 9 Chemistry and Energy 9.1-9.4
	Week 10	Mon Oct. 30 Chapter 9 Calorimetry and Enthalpy 9.5-9.8
Week 11	Mon Nov. 6 Chapter 10 Laws of Thermodynamics 10.4-10.7	Wed Nov. 8 Chapter 11 Rate Laws 11.4-11.7

Tentative Course Outline Continued:

Week 12	Mon Nov. 13 Exam 3 *****	Wed Nov. 15 Chapter 11 Chemical Kinetics 11.1-11.3
Week 13	Mon Nov. 20 Chapter 12 Chemical Equilibrium 12.1-12.4	Wed Nov. 22 Reading Day ***** No Classes
Week 14	Mon Nov. 27 Chapter 12 LeChatelier's Principal 12.7-12.8	Wed Nov. 29 Chapter 14 Nuclear Chemistry 14.1-14.4
Week 15	Mon Dec. 4 Redefined Friday ***** Attend Friday Classes	Wed Dec. 6 Chapter 14 Nuclear Chemistry 14.5-14.8
Week 15	Fri Dec. 8 7:30-9:30 a.m. Final Exam *****	