

Western Kentucky University
Ogden College of Science and Engineering
Department of Chemistry

College Chemistry II
CHEM 222.001 (CRN 02181), .002 (CRN 02183), .003 (CRN 02185)
Spring 2012

Meetings	Instructor	Office Hours
.001 & .002 9:10-10:05 AM MWF – TCCW 403 .003 9:35-10:55 AM TR – SH 4114 rooms subject to change 3.0 Credit Hours	Dr. Stuart Burris TCNW 313B 745-2973 stuart.burris@wku.edu	10:30 AM-12:00 PM MF 11:00 AM-12:00 PM TR other times by appointment with 24 hour notice preferred

Course Description

A continuation of the first year course in chemistry for science majors and minors. It is also satisfactory for general education requirements for non-science majors and minors. Covering the second half of the standard first year chemistry course.

Enrollment Requirements

Current enrollment or previous credit in CHEM 223

Previous credit in CHEM 120 and 121 with a grade of "C" or better

Previous credit in MATH 118 (or 116 & 117) or higher with a grade of "C" or better

Required Text

Ebbing, D.D.; Gammon, S.D. *General Chemistry*, 9th edition, Cengage: Boston, 2009.

ISBN-13: 9780618857487.

Supplemental Suggested Text

Ebbing, D.D. Student Solutions Manual for General Chemistry, 9th edition, Cengage: Boston, 2009.

ISBN-13: 9780618945856

Additional Materials

Scientific Calculator (TI-30Xa, equivalent or better – TI-36X Solar or equivalent recommended)

Minimum Expectations of Every Student

1. Attend every class meeting
2. Read every chapter at least once.
3. Ask questions inside and outside of class on material that is difficult or confusing
4. Complete all ALEs and work all suggested problems
5. Spend a minimum of nine (9) hours* per week by actively reading the text, preparing ALEs, working problems, and reviewing your notes.

*It is unlikely that you will do well in this class if you do not invest this amount of time!!!

Depending on your chemistry and math skills and background, you may have to commit substantially more time to this course

How this section of CHEM 222 is different (Active Learning versus Lecturing)

Welcome!!! You may be about to boldly go where no chemistry class has ever taken you before – on a journey that may change your view of chemistry and will surely change your view of science and learning. In this course you will generate your own knowledge about chemistry through active learning exercises and collaborative group work with a minimum of traditional lecturing from your instructor. Your instructor will be a learner, too, a facilitator, and a resource for information. This method of learning will allow you to practice thinking, speaking, and writing as you formulate answers to daily *Active Learning Exercises* (ALEs). You will be actively involved everyday in a variety of activities so class is interesting (we hope!) and you will not want to miss it. If you apply yourself, you will probably learn much more chemistry in this course than in others where an instructor only lectures to you because you will be immersed in learning, rather than being told about, the details.

Why the use of active and collaborative learning in place of lectures? A wealth of research over the last 15+ years indicates that little learning occurs during passive learning (i.e. lectures) and that lectures, at best, only indicate what students should study outside of class. Moreover, controlled studies show that students involved in collaborative learning classes out-perform those in the same course where lecturing is the major means of instruction.

You may find that collaborative/active learning requires an *extensive* effort. In addition, some of you may initially feel uncomfortable with this new style of instruction/learning. This is not unusual in the least primarily because the majority of your past classes were very likely taught in the traditional way. Recall the old adage, “It’s hard to teach an old dog new tricks?” Collaborative/active learning will force you to do the required readings/exercises every day. The process will help you to develop more effective study strategies/habits and to use your study time outside of class more effectively. In time you will become more familiar and comfortable with your classmates and be more at ease during group/class discussions. The skills that you learn and practice through active learning and collaborative group work in this class will stay with you long after you have ceased to remember many of the facts, concepts and theories of this course.

Evaluation (Subject to Change)

Item	Approximate Points Each	Minimum Number	Approximate Points Available
Portfolios (ALEs & HWs)	50	3	150
Collaborative Team Quizzes (CTQs)	10	9	90
Individual Mini Quizzes (IMQs)	5	18	90
Strategy Analyst Reports (SARs)	7	8	56
Peer Evaluation	10	3	30
Attendance/Participation (MWF / TR)	1 / 1.5	40 / 26-27	40
Regular Exams	120	3	360
Final Exam	200	1	200
Total			1016

Total ‘point value’ of the course will be the lesser of 1000 or the total points actually available (i.e. the ‘divisor’ for calculating grade percentage will be no larger than 1000)

Final grades will be assigned with the following tentative divisions. The grade you receive will be the grade you earn.

Letter	A	B	C	D
Percentage	89.0-100%	78.0-88.9%	67.0-77.9%	50.0-66.9%

Yes, this means percentages are rounded in the tenths place, not in the ones place.

Exam Schedule

Exam 1	Thursday, February 23, 6:00 PM
Exam 2	Tuesday, March 27, 6:00 PM
Exam 3	Tuesday, May 1, 6:00 PM
ACS General Chemistry Exam	Wednesday, May 9, 1:00 PM

Course Coverage

Ch 13: Rates of Reactions	Sections 13.1-13.9
Ch 14: Chemical Equilibrium	Sections 14.1-14.9
Ch 15: Acids and Bases	Sections 15.1-15.8
Ch 16: Acid-Base Equilibria	Sections 16.1-16.7
Ch 17: Solubility and Complex-Ion Equilibria	Sections 17.1-17.6
Ch 18: Thermodynamics and Equilibrium	Sections 18.1-18.7
Ch 19: Electrochemistry	Sections 19.1-19.11
Ch 20: Nuclear Chemistry	Sections 20.1-20.7

Evaluation Assignment Descriptions

Active Learning Exercises, Homework, and Portfolios

Learning chemistry (and most any subject!) is very much a "learn by thinking and doing" exercise. Because of this you will complete Active Learning Exercises (ALEs) in class, readings in your textbook outside class, and homework problems (HWs) to solidify your understanding of the major topics covered. Discussing the ALE's with other students in class and working on HWs outside of class are the major vehicles for learning chemistry. You don't just read about and then magically know it.

What is a Portfolio? A Portfolio is file folder containing a collection of ALE's and HWs that you have completed.

How is a portfolio organized? Each assignment should be stapled *individually* and present in the order indicated by the "Portfolio Contents Sheet" that the instructor will provide a few days before each exam. To facilitate the evaluation of the portfolios, do not attach the assignments to the file folder or to each other. After each portfolio is returned to you with a grade, remove all work from your portfolio folder to make room for future ALEs and HWs.

When are portfolios due? A portfolio containing your complete and corrected ALEs and HWs will be collected for grading at the start of exams – see the schedule on page 2 for specific dates.

Portfolio Grading

A grade will be assigned to all ALEs and HWs in your portfolio based on the following criteria...

- 100% Credit (amount depends on the assignment): ALEs and HWs bearing a stamp and that have corrections made to incorrect and/or incomplete answers according to the guidelines below. It is your responsibility to check and make corrections for all ALEs and HWs. Work must be shown on numerical problems.

Follow these guidelines when making corrections to ALE's and HWs

- Indicate if a response is correct by clearly recording a "check" next to the question number of all questions that you have checked with your team and/or an answer key.
- For incorrect or incomplete responses: Corrections and additions should be clearly indicated by using another color or by using a highlighter to highlight the correction or addition. Do not erase incorrect responses – simply cross them out by neatly putting a line through your original answer.
- If space permits, write your corrections/additions next to your original response. Do not erase incorrect responses – simply cross them out by neatly putting a line through your original answer. Be original when making corrections and answering questions. Do not just copy answers from the textbook, answer keys or other students – this is of no help to you, as little learning will take place. Work must be shown on numerical problems.
- Make corrections on separate paper only if there is insufficient space next to your original response. Clearly indicate on the top of the 1st page of the assignment and next to the individual questions that corrections are on separate paper stapled behind the last page of that ALE or HW. Number your corrections as the original questions are numbered.
- 50% to 90% Credit: Assignments bearing a stamp that lack corrections or have corrections of inferior quality or incomplete corrections. The number of points earned will be based on the quality of the work.
- 50% Credit: unstamped assignments that are complete and have corrections.
- 0% Credit: missing assignments or incomplete assignments without a stamp and without corrections.

Collaborative Team Quizzes (CTQs)

As an incentive for group members to collaborate, Collaborative Team Quizzes (CTQs) will be given periodically. All members of the group receive the same grade, so helping to prepare your team members can enhance your own score. Points will be deducted from the scores of individuals that missed activities covered on a CTQ, or a student may elect to do the CTQ individually in place of having absenteeism points deducted from their score. Talk to the instructor about it if you have a problem with all group members receiving the same score – sometimes this is not justifiable (e.g. with serious slackers) – let Dr. Burris know your concerns.

Team work is successful only when all members come prepared to contribute. Students that habitually arrive unprepared for class are likely to do very poorly in this course. Contact the instructor A.S.A.P. if extenuating circumstances keep you from completing your assignments in a timely manner.

Individual Mini Quizzes (IMQs)

Each and every day you are accountable to arrive with your reading done and your ALEs/HWs prepared. A brief Individual Mini Quiz (IMQ) based on the fundamental concepts of the ALE's being discussed may be given at any time during class. IMQs help to give you regular feedback about the state of your understanding and act as an incentive for you to stay current with your work and studies in this class.

Strategy Analyst Reports (SARs)

A Strategy Analyst Report (SAR) may be given on any day, at the instructor's discretion. The SAR is designed to assess the level and quality of each student's group and class participation.

Exams

There will be three (3) regular exams and a comprehensive final exam (ACS General Chemistry Exam) given during the semester according to the schedule on page two of this syllabus. The dates for these exams will not change. The final exam will be given on May 9. Regular exams will have a two hour time limit that will be strictly enforced. The final exam has a one hour and fifty minute time limit. A calculator will be necessary to complete the exams. Only non-programmable/non-graphing calculators will be allowed, and calculators will be checked during the exam and removed from student use if they violate this rule. Loaner calculators will not be available; you are responsible for bringing a working non-programmable/non-graphing calculator to each exam. A copy of the periodic table with symbols, atomic numbers, and atomic masses will be provided with the exam packet. Other pertinent reference material may also be supplied, but no student-prepared notes or aids of any other kind will be allowed. The regular exam format is expected to be 20 multiple choice questions (3 points each), 10 nomenclature questions (1 point each), and 50 points of open-response questions. The final exam is 70 multiple choice questions.

Policies

The academic policies stated in the *Undergraduate Catalog* will be followed with the following highlights and additions. Students will be notified of any changes to this syllabus verbally and in writing.

In compliance with university policy, students with disabilities who require accommodations (academic adjustments and/or auxiliary aids or services) for this course must contact the Office for Student Disability Services in DUC A-200 of the Student Success Center in Downing University Center. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Academic Integrity

From the Undergraduate Catalog (<http://www.wku.edu/coursecatalog/index.php?subcategoryId=75>)

Academic Offenses – The maintenance of academic integrity is of fundamental importance to the University. Thus it should be clearly understood that acts of plagiarism or any other form of cheating will not be tolerated and that anyone committing such acts risks punishment of a serious nature.

Academic Dishonesty – Students who commit any act of academic dishonesty may receive from the instructor a failing grade in that portion of the course work in which the act is detected or a failing grade in a course without possibility of withdrawal. The faculty member may also present the case to the Office of the Dean of Student Life for disciplinary sanctions. A student who believes a faculty member has dealt unfairly with him/her in a course involving academic dishonesty may seek relief through the Student Complaint Procedure.

Plagiarism – To represent written work taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of a student must be his/her own. One must give any author credit for source material borrowed from him/her. To lift content directly from a source without giving credit is a flagrant act. To present a borrowed passage without reference to the source after having changed a few words is also plagiarism.

Cheating – No student shall receive or give assistance not authorized by the instructor in taking an examination or in the preparation of an essay, laboratory report, problem assignment or other project, which is submitted for purposes of grade determination.

Attendance

From the Undergraduate Catalog (<http://www.wku.edu/coursecatalog/index.php?subcategoryid=75>)

University Attendance Policy — Registration in a course obligates the student to be regular and punctual in class attendance.

Students should make certain that their names are on the class roll. If an error has been made in registration, it is the student's responsibility to see that the error is corrected in the Office of the Registrar. It is the individual instructor's responsibility to inform students, in writing, on the first day the class meets of the guidelines for implementing the instructor's attendance policy. Students who cease attending class are expected to report to the Office of the Registrar to initiate withdrawal procedures. Withdrawal deadlines are published each semester in the schedule bulletin.

Excessive absenteeism frequently contributes to poor academic achievement. Excessive absenteeism may result in the instructor's dismissing the student from the class and recording a failing grade, unless the student officially withdraws from the class before the withdrawal deadline. If the student withdraws from the University after the end of the official withdrawal period, excessive absenteeism may be one of the considerations in the instructor's deciding whether circumstances justify a "W" or an "F" in the course. The normal appeal process is available to the student who wants to appeal the decision of the instructor.

When a student is absent from class because of illness, death in the family, or other justifiable reasons, it is the student's responsibility to consult the instructor at the earliest possible time.

Students who, without previous arrangement with the instructor or department, fail to attend the first two class meetings of a course meeting multiple times per week or the first meeting of a class that meets one time per week may be dropped from the course; however, students are responsible for officially dropping any course for which they have enrolled.

Attendance is mandatory; missing class will adversely affect your final grade. You will be assigned a grade of 'F' for excessive absenteeism if you miss ten (10) [for MWF] or seven (7) [for TR] class meetings for any reason through March 15.

Audit/W Policy

March 15 is the last day to drop with a grade of "W" or to change from credit to audit. Those who choose to change from credit to audit must adhere to the audit requirements below in addition to filing the standard University form. Any decisions regarding audits or W grades *must* be made by the March 15 deadline and the appropriate paperwork filed with the Registrar's Office by close of business that day. Dr. Burris will not sign schedule exception/appeal forms (yellow sheets) unless there are *extreme* circumstances. Bad grades do not constitute extreme circumstances. The appropriate form is the schedule change form (a.k.a. Blue Card) available in the Registrar's Office on the 2nd floor of Potter Hall.

Auditors are required to attend and participate in every scheduled class meeting. The instructor reserves the right to withdraw an auditor from the course if ten (10) [for MWF] or seven (7) [for TR] or more absences accrue after March 15. Further, disruptive behavior or nonparticipation may result in the auditor being withdrawn from the course.

Cell Phones and Other Electronic Devices

To reduce disruptions, and out of respect for the instructor and students, all cell phones and all non-note taking devices (including pagers, wireless devices, music players, etc.) must be turned off or to silent/vibrate during class. Your instructor recognizes that emergencies do happen. If you feel you need to answer your cell phone during class, please leave the room quietly and take the call outside. You do not need to ask permission, just try not to disturb your fellow students. Exception: During an exam or quiz you will FAIL if the instructor sees your music player, cell phone, or any electronic device other than an approved, non-programmable calculator.

Missed Exams

Make-up exams will *not* be given for any reason. An unexcused absence at the time of an exam will result in a grade of zero (0). An excused absence at the time of an exam will result in having the Final Exam grade substituted for the missed exam, but this can only be done for one exam. Dr. Burris must be notified within 24 hours of the exam for excusable absences, which must be well documented.

Missed Quizzes

Missed quizzes (CTQs and IMQs) *cannot* be made up. An unexcused absence at the time of a quiz will result in a grade of zero (0). However, it is likely that IMQs and/or CTQs will total more than the approximate points available listed on page 2.

Late/Incomplete Work

Students are expected to turn in all HWs and ALEs completed and at the announced due date & time. Turn your work in on time and complete – late or incomplete work will not get stamped!! An assignment is late if it is due at the start of class and it is not turned in at that time, or if an assignment is due at the end of class and the assignment is not turned in at that time. An assignment is incomplete if any questions in the assignment are not completed or if they are omitted.

Extenuating circumstances do occasionally occur – contact the instructor before an assignment is due if you are unable to meet deadlines due to an emergency.

Content Specific Learning Outcomes for CHEM 222

1. Interpret graphical data of concentration vs time.
2. Calculate a reaction rate from either graphical or tabular data.
3. Determine the reaction order, rate law and/or reaction rate constant from either initial rate data or concentration vs time data.
4. Calculate the activation energy of a reaction from graphical rate data.
5. Demonstrate an understanding of collision theory and transition state theory as they apply to reaction kinetics.
6. Interpret reaction coordinate diagrams.
7. Demonstrate an understanding of the role and mechanism of catalysts in both industrial and biochemical reactions.
8. Define and/or calculate the reaction quotient or equilibrium constant from a balanced chemical equation.
9. Calculate, using the quadratic equation if necessary, the equilibrium concentrations of reactants and products in a chemical reaction.
10. Use LeChâtelier's Principle to predict the effect of a stress applied to a chemical equilibrium.
11. Apply the principles of chemical equilibrium to problems in acid/base, solubility and/or electrochemical equilibria.
12. Calculate pH, pOH, $[H^+]$, $[OH^-]$, K_a , K_b , pK_a and pK_b for strong and weak acids and for strong and weak bases.
13. Interpret titration curves.
14. Predict the products of acid–base reactions.
15. Demonstrate an understanding of how buffers work, and be able to calculate the concentrations of all species in a buffered solution.
16. Demonstrate an understanding of the basic principles that govern solubility, and be able to predict how the solubility of solids will be affected by pH.
17. Calculate the K_{sp} and/or solubility of a weakly soluble salt.
18. Demonstrate an understanding of the factors that determine the spontaneity of a chemical reaction, and be able to determine if a given reaction will be spontaneous.
19. Demonstrate an understanding of the First, Second and Third Laws of Thermodynamic.
20. Calculate ΔS and/or ΔG for a chemical reaction.
21. Predict and/or calculate how temperature affects the spontaneity of a chemical reaction.
22. Demonstrate an understanding of how redox reactions can serve as a source of electricity, and how electricity can be used to drive non–spontaneous redox reactions.
23. Distinguish between voltaic and electrolytic cells.
24. Calculate the potential of an electrochemical cell under standard and/or non-standard conditions.
25. Demonstrate an understanding of the relationships among E° , ΔG° , and the equilibrium constant.
26. Calculate amounts of charge, time, or chemical product in problems involving electrolysis reactions.
27. Accurately describe nuclear decay products and differentiate between the basic types of nuclear decay reactions.
28. Demonstrate an understanding of nuclear binding energy and its relationship to mass changes in nuclear reactions.

Success in achieving the content specific outcomes will be demonstrated by ALEs, HWs, quizzes and exams.

Guidelines for Completing Active Learning Exercises (ALE's)

1. **Overview.** Strive to have all assigned questions completely with quality responses by the due date for each ALE. Start as far in advance of the due date as possible – don't sit down shortly before it is due and attempt to complete the whole assignment in one shot – little long-term learning will occur if you do so! With a diligent effort, most students can complete 80-90% of the questions without much outside help. However, don't panic if you do not understand everything on the ALE before coming to class. This is to be expected! Use class time with your team and, if needed, instructor office hours to tie up loose ends!
2. **Strategies for completing an ALE.** Read and carefully study the "Model" on the ALE and then answer the "Key Questions" and "Exercises" that follow it. Now use your textbook as a resource. Find the relevant chapter and section(s) in your book (usually found on the first page of the ALE). Get an overview of the chapter by reading the chapter's introduction, the sectional headings, the captions of all diagrams/illustrations and then the chapter summary at the end of the chapter. Now read the sections relevant to the ALE and work through all sample problems similar to those on the ALE. Now go back to the ALE and reexamine with a critical eye the model and your responses to the Key Questions and Exercises. Make corrections and additions to your responses as needed. Again, it is not expected that you get everything correct before coming to class with your ALE – I what we expect is a good faith effort to have completed it to the best of your ability before you spend class time discussing the ALE with your team and coming to a consensus about the answers to the Key Questions and Exercises. Make corrections to your responses while discussing the ALE in class according to the guidelines on page 3 of this syllabus.
3. **Using the Book's Index.** Avoid the temptation of simply scanning the index of your book for the pages of the book that relate to a particular question and transcribing portions of the textbook onto the ALE. Although you will get some nifty sounding answers, you will have learned and retained very little in the process.
4. **Plagiarism.** Do not complete your ALE by copying answers from your friends and classmates. Doing so prevents you from learning anything. You will get out of this collaboratively taught class only what you put into it. The process starts with you alone thinking about the ALEs, finding pertinent information and formulating answers. If you find yourself copying or wanting to copy answers from other students because you are not ready and have not done the work required, you should consider dropping the course. Without individual effort on the ALEs you will not succeed in learning very much and the group activities will make you feel and look uncomfortable (even foolish) because your mastery of the material will be significantly lacking.
5. **Put Answers in your own words.** When you can formulate an answer to a question in your own words, you have mastered the concept and should do well on the exams. If you have copied answers (either from the text or a friend) you have only gotten practice in writing and have learned little to nothing at all. Because you will not have your friend or text to copy from during the exam, you will do poorly. Memorization gets you nowhere in this class – learning major concepts gets you everything.
6. **Alternate Resources.** Sometimes you will not find all the information you need to properly formulate your answers to the ALE questions. If this is the case, you will need to consult other resources, such as reliable online resources, the library, a dictionary, etc.

The Road to Success—Some Tips...

1. Stay focused: don't let life's distractions derail you from your personal, academic and/or career goals:
 - Keep a positive attitude,
 - Dedicate your energy towards actions that will help you to be successful,
 - Work hard to achieve your goals, and
 - Have confidence in yourself!
2. If you need extra help in this class (or any other class!), take advantage of the instructor's office hours and the TLC in DUC.
3. Visit the Blackboard page and the textbook's web pages for this class often since they have many useful study aids and practice problems.
4. Many students benefit greatly by being involved in a study group consisting of other members of this class. If you wish, exchange phone numbers and email addresses A.S.A.P. with a few people in this class.
5. Be intellectually active in class: participate actively in class discussions and ask questions.
6. Do the assigned reading and complete the ALEs *before* the material is discussed in class. Make a list of questions you have concerning the assigned reading and/or the questions on the ALEs. Be certain to get clarifications during class time, with your study group, and/or during office hours.
7. Review and rewrite your class notes and the relevant material in your textbook *immediately* after class or as soon as possible.
8. Study daily: Develop a study plan in which you will study for this class at least 2 hours daily, at least 6 days a week. Just as one cannot train for a marathon by training sporadically for several hours at a time, one can't study sporadically for long periods of time and expect to learn with retention. Regular study sessions of one-hour duration or less are more effective than massive cram sessions.
9. Isolate yourself from distractions while studying.
10. Study efficiently: Don't waste too much time on a tough problem or concept. Go on to the next problem and come back to the real stumpers later. Get help as needed from your fellow classmates and from your instructor. Often it's only a few small details that may keep you from understanding something – what seems like a major stumbling block might in reality be something minor!
11. Studying for an Exam
 - Learn from your instructor the type of exam (essay, multiple choice, etc.).
 - Study regularly throughout the term.
 - See the Blackboard page for study aides and practice questions.
 - Set up a study schedule and review all materials well before the exam.
 - Write out likely questions and answer them.
 - Form a study group, discuss the materials you will be tested on, and quiz your partners.
 - Get enough rest the night before the exam.
12. Taking a Multiple Choice Exam
 - Read each question carefully—underline key words within each question.
 - Before looking at the possible answers, form an answer in your mind.
 - Read each possible answer before making a choice.
 - Watch for words such as *always*, *never*, *only*, or *except*.
 - Don't change your initial answer unless you are *absolutely certain* it's wrong.
13. Taking an Essay or Problem-Solving Exam
 - Survey all questions/problems and note the questions that are easy for you.
 - Estimate how much time you have to answer each question.
 - Answer easier questions first to build your confidence.
 - Read each question several times to ensure that you understand what is being asked – underline key words such as *analyze*, *discuss*, *define*, or *describe*.
 - Take a few moments to brainstorm and create a rough outline of your response or problem-solving approach.
 - Support each major idea with specific examples and detailed information – show your work on problems.
 - On essays, remember to begin each answer with an introduction that gives an overview of your response.
 - Conclude by briefly summarizing your answer or boxing in or highlighting your final number(s) and units.

Schedule through Exam 1 for MWF Class

	Date	Discussion Topic or ALE	Due at Beginning of Class
Mon	23-Jan	Syllabus/Blackboard and Resources Introduction ALE 0. Getting to Know You and the Ground Rules	
Wed	25-Jan	Chapter 13 – Rates of Reaction (Quick Lecture)	ALE 0 (Ground Rules)
Fri	27-Jan	ALE 1. Chemical Kinetics: Rates of Chemical Reactions	
Mon	30-Jan	ALE 2. Rate Laws: Expressing and Quantifying the Rate of Reaction	ALE 1 & HW 1.1
Wed	1-Feb	ALE 3. Integrated Rate Laws	ALE 2
Fri	3-Feb	ALE 4. Effect of Temperature and Catalysts on Reaction Rates	ALE 3
Mon	6-Feb	ALE 5. Reaction Mechanisms	ALE 4 & HW 1.2
Wed	8-Feb	Chapter 14 – Chemical Equilibrium (Quick Lecture)	ALE 5
Fri	10-Feb	ALE 6. Reversible Reactions	
Mon	13-Feb	ALE 7. Equilibrium Constants	ALE 6 & HW 1.3
Wed	15-Feb	ALE 8. Using ICE Tables to Solve Equilibrium Problems	ALE 7
Fri	17-Feb	ALE 9. Equilibrium Problems: ICE Practice!	ALE 8
Mon	20-Feb	ALE 10. Le Châtelier's Principle	ALE 9 & HW 1.4
Wed	22-Feb	Open Q&A	
Thu	23-Feb	Exam 1, 6 PM (location TBA)	

Schedule through Exam 1 for TR Class

	Date	Discussion Topic or ALE	Due at Beginning of Class	Due at End of Class
Tue	24-Jan	Syllabus/Blackboard and Resources Introduction ALE 0. Getting to Know You and the Ground Rules		
Thu	26-Jan	Ch 13 Quick Lecture ALE 1. Chemical Kinetics: Rates of Chemical Reactions	ALE 0 (Ground Rules)	
Tue	31-Jan	ALE 2. Rate Laws: Expressing and Quantifying the Rate of Reaction ALE 3. Integrated Rate Laws	ALE 1 & HW 1.1	
Thu	2-Feb	ALE 3. Integrated Rate Laws ALE 4. Effect of Temperature and Catalysts on Reaction Rates	ALE 2	ALE 3
Tue	7-Feb	ALE 4. Effect of Temperature and Catalysts on Reaction Rates ALE 5. Reaction Mechanisms	HW 1.2	ALE 4
Thu	9-Feb	Ch 14 Quick Lecture ALE 6. Reversible Reactions		ALE 5
Tue	14-Feb	ALE 7. Equilibrium Constants ALE 8. Using ICE Tables to Solve Equilibrium Problems	ALE 6 & HW 1.3	
Thu	16-Feb	ALE 8. Using ICE Tables to Solve Equilibrium Problems ALE 9. Equilibrium Problems: ICE Practice!	ALE 7	ALE 8
Tue	21-Feb	ALE 9. Equilibrium Problems: ICE Practice! ALE 10. Le Châtelier's Principle	HW 1.4	ALE 9
Thu	23-Feb	Open Q&A during class Exam 1, 6 PM (location TBA)		