

CHEM 178-B | General Chemistry II

CHEM 178 involves the study of chemical reactions, their kinetic and thermodynamic characteristics. In particular, acid-base and reduction-oxidation (redox) reactions will be emphasized. The course concludes with a discussion of nuclear chemistry.

Catalog: Continuation of 177. Recommended for physical or biological science majors, chemical engineering majors, and all others intending to take 300-level chemistry courses.

Lectures / Recitations / Hour Exams / Final Exam

3 credits = 2 lecture hours + 1 recitation hour per week

- (Sections 12-18) **Mon/Wed 1:10-2:00 pm** in **1352 Gilman Hall**, recitations meet on Fridays

3 night exams: **Sep 20, Oct 18, and Nov 29** (all Tuesday evenings), 7:00-8:00pm. Room assignments for these exams will be announced during recitations early in the semester. See Exam policies under [Assessments](#).

Final Exam: Tuesday, **Dec 13**, Noon-2:00pm. See Final Exam policies under [Assessments](#).

Instructor Information (Fall 2022):

Instructor: Gordon Miller

E-mail: chem178bq@iastate.edu

Phone: 515-294-6063

Office: 2110 Hach Hall

Office Hours: Prof. Miller will be available immediately following each lecture period.

Individual visits in-person or via [Webex](#) must be set up by appointment. Prof. Miller is available by appointment Monday-Thursday. Please communicate via e-mail at least 24 hours (48 hours on week-ends) prior to any appointment and indicate at least two scheduling options.

Head TA: Jayme Brickley

E-mail: chem178bq@iastate.edu

Office Hours: The Head TA will be generally available immediately following each lecture period, and will have a weekly office hour in the [Martha Russell Chemistry Help Center](#).

Contacting the Instructor or Head TA: We encourage you to contact the Instructor or Head TA using the following methods:

- Use the **Help Forum** on the **Canvas course page** to ask questions/concerns about the course (navigating Canvas, lecture videos, quizzes, exams, how to approach a homework problem, etc.)
- Use **email** (chem178bq@iastate.edu) for questions/concerns that are personal in nature (scheduling an appointment; SAAN, etc.)

Response time is approximately 24 hours.

All e-mails to the Instructors, the Head TA, or to your recitation TA are formal communications. Therefore, proper written etiquette and correct English spelling and grammar are expected. The *Subject line* on your email must contain "Re: CHEM 178-B" followed by a brief description of the message topic. If the topic of your message to your Instructor involves your TA, *be sure to provide your TA's name*. Any matters which the Instructors feels are of interest to the class will be addressed during lecture or by an announcement via Canvas.

General Learning Objectives and Outcomes

By successfully completing CHEM 178, students will be able

- to recognize kinetic and thermodynamic features of chemical reactions.
- to evaluate the important characteristics of chemical and physical equilibria.
- to recognize acid-base reactions.
- to recognize reduction-oxidation (redox) reactions.
- to represent any chemical process using a balanced chemical equation.

For specific learning objectives, please see the CHEM 178 Canvas website.

Prerequisites:

CHEM 177, CHEM 177L, or CHEM 167

CHEM 178 involves the study of chemical reactions, and will emphasize acid-base and reduction-oxidation (redox) reactions. Material in this course will build off certain foundations set in CHEM 177 or CHEM 167. If you need to review key topics from these courses, the following list identifies those topics (with Chapters/Sections from the required textbook for CHEM 178) that you may review as the semester progresses:

- *Stoichiometry*: Balancing chemical equations, converting between mass and moles, performing stoichiometric calculations, limiting reagents (Chapter 3)
- *Aqueous Solutions*: Properties, calculating molarity (Chapter 4, Sections 2-3)
- *Gases*: Ideal gas law, partial pressures (Chapter 5, Sections 3-5)
- *Thermochemistry*: First law of thermodynamics, enthalpy, calculating enthalpies of chemical processes (Chapter 6)
- *Lewis Structures*: Drawing simple Lewis structures, resonance, covalent bond strengths and lengths (Chapter 8, Sections 7-12)

Course Format

In-person lectures and recitations over 15 weeks. Lectures will follow the course schedule - any changes will be announced during the lecture periods. Students are expected to read the assigned text material and/or view the videos before coming to lecture. Lectures will use PowerPoint and some board work along with occasional demonstrations and in-class problem solving.

- All lectures will be captured (video of screens + audio) and posted in Canvas.
- Previews of lecture slides (PDF format) are available on Canvas. It may be helpful to print or save them to your personal computer for use during the lecture periods.

Recitations are directed by graduate or undergraduate teaching assistants (TAs), and are intended for discussion of problems concerning the week's topics. During each recitation (15 total), there will be a worksheet. TAs will hold office hours in the [Martha Russell Chemistry Help Center](#), 1761 Gilman Hall. The schedule of TA office hours is posted in Canvas.

Required Textbook and Supplies

- *Chemistry* (10th Edition), S.S. Zumdahl, S.A. Zumdahl, D.J. DeCoste, G. Adams (2018), Cengage Learning: Boston. (ISBN: 978-1-305-95740-4).
- OWLv2 online homework.
- A scientific calculator with basic functions including logarithms and exponential functions.

This course is enrolled in the Iowa State University *Immediate Access Program*.

What is Immediate Access?

Immediate Access is a collaborative affordability initiative between the ISU Book Store, faculty, and publishers. Students that are enrolled in an Immediate Access course will receive access to all required digital course materials the first day of class and at a reduced cost compared to the national average.

What digital content is required for this course?

The following Cengage Learning OWLv2 courseware is required for this course:

- **Title:** OWLv2 with MindTap Reader, 4 terms (24 months), for Zumdahl/Zumdahl/DeCoste's, Chemistry, 10th Edition
- **Authors:** Steven S. Zumdahl; Susan A. Zumdahl; Donald J. DeCoste
- **Publisher:** Cengage
- **ISBN:** 978-1-305-95758-9
- **Price to Student:** \$41.20
- **Duration:** 180 days

How do I access the required digital content?

Cengage Learning's OWLv2 courseware is required to do online homework for this course. To access OWLv2 in Canvas for CHEM 178:

1. Go to **Modules** and follow the instruction under "Cengage Information: ...".
2. Register for OWLv2 using your Iowa State email. Once you register for the course, you should have access to the OWLv2 platform. There is no access code to register. If you are prompted to enter an access code or pay for a code, please email *Immediate Access* at immediateaccess@iastate.edu. Do not pay for a new code.
3. An e-Text is included and accessed within the OWLv2 Courseware only. There is no e-Text accessible through the RedShelf Course Materials tool.

How is Immediate Access billed?

You will be automatically charged on your u-bill for this digital content. The billing description on your u-bill will appear as CHEM 178 IMMEDIATE ACCESS 7589. The amount charged on your u-bill will be the same as the amount listed as the "Price to Student" listed above in the digital content requirements.

What if I drop the course?

Students who drop the course within the first 10 days of class will receive a refund on their u-bill. YOU DO NOT HAVE TO NOTIFY THE BOOKSTORE IF YOU DROP THE COURSE. This is an automated process.

Can I opt out of Immediate Access?

Students may choose to opt out of the program. Opting out does not mean you are dropping the course. It simply means you are choosing not to receive the digital content from the bookstore and you must find another way to acquire it in order to complete required homework assignments. Students have within the first 10 days of class to opt out and receive a refund to their u-bill.

The last day to opt out is September 2nd, 2022, 11:59PM EDT. To opt out during the first 10 days of class:

1. Click on the "Immediate Access Course Materials" tool on the Canvas Course navigation menu.
2. On the next page, click on the "Want to opt out" bar on the title card for the digital item.

For further questions about Immediate Access please email immediateaccess@iastate.edu

Course Resources on Canvas

The Canvas page for CHEM 178 contains the information and links to the various resources and assessments. Please familiarize yourself with these pages. Under Modules, you will find:

- **Course information:** syllabus, schedule, contact information, recitation schedules, TA office hours.
- **Weekly activities (15):** links to review questions, OWL mastery problems, and lecture slides and audio/video capturings.
- **Topical modules (7):** learning objectives, video presentations, slides, and notes, which were created for the on-line offerings of CHEM 178 during Academic Year 2020-2021.

Canvas Help

General help with Canvas can be found under the Help link in the global navigation menu on the left side of your Canvas page. You will find:

- [Canvas Live Chat – 24/7 live chat with Canvas specialists](#)
- [Canvas Guides – a repository of "how-to" websites](#)
- [Ask the Canvas Community-Online support forum for canvas users. Log in using ISU credentials.](#)
- ISU Canvas Support Line: Call 515 294 4000, press 2 and then press 1. [Hours of operation.](#)
- Go to [Lynda.com](https://lynda.com) and log in with your ISU credentials. Search for the desired tutorial.

Basic Troubleshooting (if Canvas is not working)

- Username/Password not working?
 - The login information (username and password) for Canvas is the same as for your ISU email account.
 - For help with Username and Password, please visit [University Accounts](#) or contact Solution Center at 515-294-4000 or solution@iastate.edu.
- If you get an error message, check for Browser and Java Issues on your computer.
- If you are unable to access course content or activities (e.g., Tests, Discussions, Assignments, etc.), contact your instructor at chem178q@iastate.edu.

Library

To login from off-campus: When you are off ISU campus and would like to access one of ISU's subscription databases or licensed full text resources (such as journal articles, e-books, and journals) from the [Library website](#), you will be prompted to login using the last 11 digits of your ISU University ID (9-digit University ID plus the following 2-digit Security Code) and [the Library password \(Borrower ID password\) you set](#).

Even if you do not have a physical ISUCard, you do have an ISU University ID number. If you don't remember that number, you can login to [AccessPlus](#) using your social security number and verify your University ID number.

Login questions or problems? Contact Circulation Desk staff: Phone (515) 294-3961 or email CircDesk@iastate.edu

See also the Library's [Distance Learning Support](#) guide for more information on access, how to find and search helpful databases, and how to get articles and books you need sent to you.

Assessments

- **Exams:** Three evening exams are scheduled for **Sep. 20**, **Oct. 18**, and **Nov. 29** (all Tuesday evenings). Exam format is: (a) two pages of multiple-choice questions; (b) two pages of word problems; (c) one-page Information Sheet.

Question and Answer sessions for each exam are tentatively scheduled on Mondays, Sep. 19, Oct. 17, and Nov. 28 from 7-8pm in 1002 Gilman Hall. As these dates, times, and location are finalized, this information will be updated.

To avoid a zero score for a missed hour exam, documentation of a valid reason (e.g., serious medical situation or family death) is required. The Thielen Student Health Center does not provide documentation for excuses to miss exams. Make sure you do not plan or take a trip that is not officially sanctioned in writing by ISU or by a branch of the military, and that causes you to miss an hour exam. Pre-booked vacation flights are not valid excuses. If the excuse is approved by Prof. Miller, your other two exam scores will be used to determine your missing score. *A student missing two exam scores will be asked to drop the course.*

Your graded exams will be returned during the recitation period following the exam. If you suspect an error in the grading of an exam, you must bring it to the attention of your TA *before leaving the recitation class on the day the exam was returned to you.*

The Right-To-Privacy Act prohibits disclosure of exam scores over the phone or by e-mail.

- **Lecture/Topic Review Questions:** Each week, 5 multiple-choice questions about material covered during the current week are to be completed in Canvas. Each assignment becomes available on Monday and must be completed no later than 11:59pm on Thursday night of that week. You are allowed 2 attempts; you have 30 minutes to complete each attempt once you start; and the higher score will be counted. There are no exceptions to this policy and no extensions or make-ups for Review Questions will be granted.
- **OWLv2 Mastery Problems:** Login to the OWLv2 homework system through the Canvas CHEM 178-B course page. There will be 15 OWLv2 assignments throughout the semester. Each assignment is open for about 1-2 weeks; late OWLv2 assignments will receive a 10% penalty if completed after the posted due date/time, but before the date of the respective exam. ***See the Canvas course page for due dates.*** These mastery problems are designed to help you learn a topic before moving on to the next one. There are no exceptions to this policy and no extensions or make-ups for OWL HW assignments will be granted.

- **Recitation Worksheets:** During each recitation period, every student will complete a one-page worksheet on the week's material. These may be completed with a partner or alone. The best 12 worksheet scores will count toward the final grade. No make-up of any missed worksheet is allowed.
- **Final Exam:** A comprehensive exam on Tuesday **Dec. 13** from Noon-2:00pm. No final exams will be administered *earlier* than this date – please arrange end-of-semester travel plans accordingly. The final will consist of multiple-choice questions and writing balanced chemical equations from a written description.
 A final exam review session will be held prior to the exam date; the exact date, time, and location will be announced later in the semester.

Grading

<i>Assessments</i>	<i>Total Points</i>	<i>Percent Contribution</i>
Hour Exam I (Sep 20)	100 pts	15%
Hour Exam II (Oct 18)	100 pts	15%
Hour Exam III (Nov 29)	100 pts	15%
Lecture Review Questions	75 pts	10% (based on 65 pts)
OWLv2 Mastery Problems	172 pts	15% (based on 150 pts)
Recitation Worksheets (10 pts each)	120 pts	15% (best 12 outcomes)
Final Exam	100 pts	15%

Students will retain all points earned for Lecture Review Questions and OWLv2 Mastery Problems, which may result in bonus points toward the final grade.

Tentative Grading Scale

Letter Grade	% Range
"A" (= A, A-)	88-100
"B" (= B+, B, B-)	74-88
"C" (= C+, C, C-)	60-74
"D" (= D+, D, D-)	48-60
"F"	0-48

+/- grading will be applied, but these specific ranges will be determined once all scores for the academic semester are entered.

Academic Support

Students who are struggling to succeed in CHEM 178 or any of their courses are encouraged to take advantage of support available to them: office hours; help centers; Supplemental Instruction; and the Academic Success Center (<http://www.dso.iastate.edu/asc>). Students should work closely with their academic adviser to implement a plan for success.

The Department of Chemistry provides help to all general chemistry students in the **Martha E. Russell Chemistry Help Center** in 1761 Gilman Hall. It is open Monday-Thursday from 9am to 6pm and Friday from 9am to 1pm. The Help Center is staffed by general chemistry TAs. *All TAs for CHEM 178 will hold their office hours only in this room* and any student in CHEM 178 can obtain help from any of the CHEM 178 TAs. General chemistry textbooks, solutions manuals, study guides, and workbooks are available for

use; all resources in the Help Center may not be removed from the room. Students are encouraged to form study groups and meet on a regular basis.

Supplemental Instruction (SI) will be offered to students in CHEM 178. The SI schedule is posted at <https://apps-dso.sws.iastate.edu/si/>. Our Supplemental Instruction (SI) leader will introduce him/herself during the first week of lecture. This person will be available to answer questions in specified rooms around campus each week. The SI leader is not provided answer keys to the assessments.

Course Policies

Late Assignments and Deadline Extensions

The weekly lecture/topic review questions and OWL mastery problems are designed to help you master a topic and keep you on task as the semester progresses. It is very important that you complete the work by the scheduled deadline.

- Late submissions of OWL Mastery Problems are accepted on OWL with 10% penalty (see [Assessments](#)).
- Late submissions of weekly Lecture/Topic Review Questions are not accepted and will result in a score of zero for that week's assignment.

Therefore, please contact the instructor/head TA should you have had extraordinary circumstances that prevented you from completing the assignment *no later than* 10:00 AM the day after the deadline.

Deadlines are firm and communication is important. If you know you will be unable to complete an assignment because of illness or another emergency, contact the instructor/head TA in advance. If the illness or other emergency happens on the day the assignment is due, you must contact the instructor/head TA ASAP and by 10:00 AM the day after the deadline.

Cheating and Plagiarism

Please review the information under [Academic Misconduct](#).

Expected In-Class and On-line Behaviors

- All communication within the course should adhere to university standards of [Netiquette at ISU](#). Specifically, communication should be scholarly, respectful, professional, and polite.
- You are expected to follow [ISU's Principles of Community](#).
- You are encouraged to disagree with other students, but such disagreements need to be based upon facts and documentation. It is the instructor's goal to promote an atmosphere of mutual respect during our interactions. Please contact the instructor or head TA if you have suggestions for improving the interactions in this course.
- Professional and respectful tone and civility are expected when communicating with fellow learners and the instructor at all times.
- Video interactions must reflect a respectful tone in verbal communications and body language.
- Use correct spelling and grammar in all written communications.

Expectations for On-Line Assignments and Recitation Worksheets

- You may work with others, but completing assignments independently will enhance your learning.
- You may use the CHEM 178 Canvas course content and your notes.

Expectations for all Examinations

- You must work independently.

- You will need a scientific calculator with basic functions including logarithms and exponential functions. *Graphing calculators are not allowed for exams.* A small number of basic calculators will be available to borrow during the hour exams and final (you will need to leave your student ID to borrow one).

Scores

Weekly Lecture/Topic Review Questions and OWLv2 Mastery Problems are automatically graded either directly on Canvas or in the Cengage OWLv2 platform.

Recitation Worksheets will be graded by TAs and scores should be posted within 1 week of the due date.

Hour exams will be graded by TAs and scores should be posted within 24 hours of the exam date. The exams will be returned during the immediately following recitation period.

If you believe that an error has occurred, you must inform the instructor immediately, and by one week after the assignment/exam due date. *It is each student's responsibility to check his/her/their grades on Canvas.*

Final Grades

Final grades are based solely on graded work and are NOT negotiable. **No single student will be offered make-up assignments or extra credit points.** By completing all weekly Lecture/Topic Review Questions and OWLv2 Mastery Problems before their respective due dates, there are opportunities to earn bonus points.

Course Evaluations

Students will be asked to evaluate their TAs at mid-term by completing a questionnaire on Canvas. At the end of the semester, similar course evaluations will be conducted, also including one for Prof. Miller. Student comments become a part of personal files and are used for course improvement, so constructive comments are appreciated. There will be one bonus point toward a student's total score for filling out each evaluation (3 pts maximum).

Grading Policies regarding Incomplete Grades

<https://catalog.iastate.edu/academiclife/gradingsystem/#gradepolicies>

ISU Academic Calendar

<https://www.registrar.iastate.edu/calendar/>

Additional Learner-Centered Information

- Take time to familiarize yourself with the course structure and layout in the Canvas CHEM 178 site.
- Read all essential documents – course syllabus and course schedule.
- Identify and establish the communication channels provided – Help Forums and e-mail
- Confirm technical requirements – so that you can access all the materials
- Be patient and respectful of the response time indicated.
- Plan your time – have a personal schedule, establish and maintain a consistent study time, and stay organized. DO NOT WAIT UNTIL THE LAST MOMENT TO WORK ON ANY ASSIGNMENT.
- Make connections with fellow classmates, your TA, the Head TA, and the instructor.
- Ask questions whenever things are unclear or confusing.

Academic Misconduct

All acts of dishonesty in any work for this course constitute academic misconduct. Online courses are no exception. The Student Disciplinary Regulations (<http://policy.iastate.edu/policy/SDR>) will be followed in the event of academic misconduct. Depending on the act, a student could receive an F grade on the test/assignment, an F grade for the course, or be suspended or expelled from the University. Academic misconduct includes all acts of dishonesty in any academically related matter and any knowing attempt to help another student commit an act of academic dishonesty. See more information at [Academic/Research Misconduct for Students](#). Academic dishonesty includes, but is not limited to each of the following acts when performed in any type of academic or academically related matter, exercise, or activity.

Plagiarism

Plagiarism is the act of representing directly or indirectly another person's work as your own. It can involve presenting someone's speech, wholly or partially, as your own; quoting without acknowledging the true source of the quoted material; copying and handing in another person's work with your name on it; and similar infractions. Even indirect quotations, paraphrasing, etc., can be considered plagiarism unless sources are properly cited. Plagiarism will not be tolerated, and students could receive an F grade on the test/assignment or an F grade for the course. The Iowa State University policy for academic misconduct can be found in the Student Disciplinary Regulations.

Obtaining Unauthorized Information

Information is obtained dishonestly, for example, by copying graded homework assignments from another student, by working with another student on a take-home test or homework when not specifically permitted to do so by the instructor, or by looking at your notes or other written work during an examination when not specifically permitted to do so.

Tendering of Information

Students may not give or sell their work to another person who plans to submit it as his or her own work. This includes giving their work to another student to be copied, giving someone answer(s) to exam question(s) during an exam, taking an exam and discussing its contents with students who will be taking the same exam, or giving or selling a term paper to another student.

Misrepresentation

Students misrepresent their work by handing in the work of someone else. The following are examples: purchasing a paper from a term paper service; reproducing another person's paper (even with modifications) and submitting it as their own; having another student do their computer program or having someone else take their exam.

Bribery

Offering money or any item or service to a faculty member or any other person to gain academic advantage for yourself or another is dishonest.

University Policies

Accommodations and Accessibility Statement

Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act and is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. *Reasonable accommodations are not retroactive* in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Religious Accommodation

If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email studentassistance@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Free Expression

Iowa State University supports and upholds the First Amendment protection of [freedom of speech](#) and the principle of [academic freedom](#) in order to foster a learning environment where open inquiry and the vigorous debate of a diversity of ideas are encouraged. Students will not be penalized for the content or viewpoints of their speech as long as student expression in a class context is germane to the subject matter of the class and conveyed in an appropriate manner.

Contact Information for Academic Issues

If you are experiencing, or have experienced, a problem with any of the above statements, email academicissues@iastate.edu.

Public Health

If you are not feeling well, you should stay home and focus on your health. Should you miss the lecture or recitation due to illness, it is your responsibility to work with your instructor to arrange for accommodations and to make up coursework, as consistent with the instructor's attendance policy (see earlier sections of this syllabus).

You may choose to wear a face mask and/or receive the COVID-19 vaccine and boosters, as well as other vaccines such as influenza, but those options are not required. Thielen Student Health Center will continue to provide COVID-19 vaccinations free-of-charge to students. The university will continue to offer free masks and COVID-19 test kits during the fall 2022 semester. Other wellbeing resources for students are available at: <https://www.cyclonehealth.iastate.edu/wellbeing-resources/>

Prof. Miller will wear a face shield during lecture periods and will wear a mask during any one-on-one meetings with students.

Public health information for the campus community continues to be available on Iowa State's [public health website](#). All public health questions should be directed to publichealthteam@iastate.edu.

Tentative Schedule of Topics / Meetings

Week	Date	Topics / Activity	Text Reading	Videos (Modules)
1	Aug 22-23	Introduction; Kinetics	12.1	Mod 1: V1-V2
	Aug 24-25	Kinetics	12.2, 3	Mod 1: V3-V4
	Aug 26	Recitation (Worksheet #1)		
2	Aug 29-30	Kinetics	12.4, 6	Mod 1: V5-V6
	Aug 31-Sep 1	Kinetics	12.5, 7	Mod 1: V7-V8
	Sep 2	Recitation (Worksheet #2)		
3	Sep 5	Labor Day (No lecture; this period will be completed on Sep 19)		
	Sep 6-7	Equilibria	13.1-4	Mod 2: V1-V3
	Sep 8, 12	Equilibria	13.5	Mod 2: V3-V4
	Sep 9	Recitation (Worksheet #3)		
4	Sep 13-14	Equilibria	13.5, 7	Mod 2: V5-V6
	Sep 15,19*	Equilibria	13.5, 6	Mod 2: V7
	Sep 16	Recitation (Worksheet #4)		
5	Sep 20	Hour Exam I (Kinetics, Equilibria)		
	Sep 21-22	Acids and Bases	14.1-3, 6	Mod 3: V1-V3
	Sep 23	Recitation (Worksheet #5)		
6	Sep 26-27	Acids and Bases	14.1-3, 6, 7	Mod 3: V4-V6
	Sep 28-29	Acids and Bases	14.1-3, 6, 7	Mod 3: V6-V7
	Sep 30	Recitation (Worksheet #6)		
7	Oct 3-4	Acids and Bases	14.9-11	Mod 3: V8-V9
	Oct 5-6	Aqueous Equilibria	15.1, 2, 4	Mod 4: V1-V2
	Oct 7	Recitation (worksheet #7)		
8	Oct 10-11	Aqueous Equilibria	15.2, 3	Mod 4: V2-V3
	Oct 12-13	Aqueous Equilibria	11.1-3; 16.1	Mod 4: V4-V5
	Oct 14	Recitation (Worksheet #8)		
9	Oct 18	Hour Exam II (Equilibria, Acids and Bases, Aqueous Equilibria)		
	Oct 19-20	Electrochemistry	4.9, 10	Mod 5: V1-V2
	Oct 21	Recitation (Worksheet #9)		
10	Oct 24-25	Electrochemistry	18.1-3	Mod 5: V3-V4
	Oct 26-27	Electrochemistry	18.1, 2, 5	Mod 5: V5
	Oct 28	Recitation (Worksheet #10)		
11	Oct 31-Nov 1	Electrochemistry	18.7, 8	Mod 5: V6
	Nov 2-3	Thermodynamics	17.1-3	Mod 6: V1-V2
	Nov 4	Recitation (Worksheet #11)		
12	Nov 7-8	Thermodynamics	17.5, 6	Mod 6: V3-V4
	Nov 9-10	Thermodynamics	17.4, 7	Mod 6: V5-V6
	Nov 11	Recitation (Worksheet #12)		
13	Nov 14-15	Thermodynamics	17.8-10; 18.3	Mod 6: V7-V8
	Nov 16-17	Nuclear Chemistry	19.1, 3, 4	Mod 7: V1-V3
	Nov 18	Recitation (Worksheet #13)		
14	Nov 21-25	Thanksgiving Break		
	Nov 29	Hour Exam III (Electrochemistry, Thermodynamics)		
	Nov 30-Dec 1	Nuclear Chemistry	19.1, 5, 6	Mod 7: V3-V4
15	Dec 2	Recitation (Worksheet #14)		
	Dec 5-6	Nuclear Chemistry	19.2	Mod 7: V5
	Dec 7-8	Course Summary		
	Dec 9	Recitation (Worksheet #15)		
	Dec 13	Final Exam (Comprehensive; Noon-2pm)		