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**Chem 177 Chemistry Department Homepage:** <https://www.courses.chem.iastate.edu/courses/2022/fall/chem-177>

**Canvas:** <https://www.celt.iastate.edu/learning-technologies/canvas-isu/>

**Top Hat:** <https://success.tophat.com/s/>

*Chem 177 and 177L/177N are co-requisite courses, i.e., students in Chem 177 are required to take Chem 177L/177N at the same time or to have already received credit in 177L/177N. If you do not fulfill these requirements, you will not get credit for Chem 177. Students who drop or audit Chem 177 will be required to drop 177L/177N and vice versa. Students may not register to audit Chem 177 after 5:00 PM on Friday, September 2, 2022. The audit does not count towards full-time student status. **To add or drop recitation or lab sections during the first week of class, use AccessPlus. After the first week, please go to the Undergraduate Chemistry Office in 1608 Gilman (M-F 8 – 11:50 am and 1 – 5 pm).** The last day to change the course to pass/not pass or to drop CHEM 177 is Friday Oct. 28<sup>th</sup>, 2022.*

**Required Textbooks & Supplies:** *Chemistry* (10<sup>th</sup> Edition), Zumdahl, Zumdahl, DeCoste (2018), Cengage: Boston. This book is part of the **Inclusive Access** program at Iowa State, which means that by enrolling in this course you will have the e-book version and the electronic homework included as part of your U-Bill. By using this option, the book and homework comes at a much lower price than other textbook/homework options.

- Top Hat Subscription; ISBN: 978-0-986-615115

#### COVID-19 Information:

**Face masks encouraged:** Because of the continuing COVID-19 pandemic, all students are encouraged—but not required—to wear face masks, consistent with current recommendations from the Centers for Disease Control and Prevention. Further information on the proper use of face masks is available at: <https://www.cdc.gov/coronavirus/2019-ncov/your-health/effective-masks.html>. *Note that Prof. Holme will wear a face mask while teaching in Troxell Hall.*

**Vaccinations encouraged:** All students are encouraged to receive a vaccination against COVID-19. Multiple locations are available on campus for free, convenient vaccination. Further information is available at: <https://web.iastate.edu/safety/updates/covid19/vaccinations>. Vaccinations may also be obtained from health care providers and pharmacies.

**Physical distancing encouraged for unvaccinated individuals:** Classrooms and other campus spaces are operating at normal capacities, and physical distancing by faculty, staff, students, and visitors to campus is not required. However, unvaccinated individuals are encouraged to continue to physically distance themselves from others when possible.

#### Top Hat Response Technology:

We will begin using a response system based on your phone or tablet on day two and assessing points starting on **Friday, August 26, 2022**. We will be using the Top Hat ([www.tophat.com](http://www.tophat.com)) classroom response system in class. You will be able to submit answers to in-class questions using smartphones, tablets, laptops, or through text messaging. You can visit the Top Hat Overview ([support.tophat.com/hc/en-us/articles/200019034-Top-Hat-Overview-Getting-Started](https://support.tophat.com/hc/en-us/articles/200019034-Top-Hat-Overview-Getting-Started)) within the Top Hat Success Center which outlines how you can register for a Top Hat account, as well as provides a brief overview to get you up and running with the system. An email invitation to join your Top Hat space will be sent to you by Prof. Holme, but if you don't receive it, you can still create your student account at tophat.com. You will be required to purchase a Top Hat license from the ISU Book Store or online in order to access any quizzes or questions your instructor creates in the Top Hat system. Should you require assistance with Top Hat at any time please contact the IT Solution Center at 515-294-4000 or [solution@iastate.edu](mailto:solution@iastate.edu).

**Nonprogrammable scientific calculator** (with  $\ln x$ ,  $e^x$ ,  $\log x$ ,  $10^x$ ,  $y^x$  functions). Calculators with graphing and text capabilities may not be used during exams and quizzes. All calculators are subject to inspection during exams and quizzes; improper calculators may be temporarily confiscated. Bring your own calculator to class and recitation. Your mobile phone cannot be used as a calculator on a test.

**OWL V2:** OWL V2 is an online homework and tutorial system that is associated with our textbook. Because we have Inclusive Access you **SHOULD NOT** buy an “access code” for OWL V2. You already have access by signing up for this course (as long as you haven’t taken actions to override the Inclusive Access billing on your UBill.) You will be able to access the Homework, the ebook and a set of “animations” associated with the book directly from the Canvas page for the course. The homework assignments you see are specifically for students in the MWF 11:00 AM class in Troxell Hall. The first assignment to get familiar with OWL is due **Wednesday, August 31 at 7:59 PM** and the first book homework for Chapter 1 is due on **Friday, September 2 at 7:59 PM**. Step by step instructions for registering in the OWL and joining the course are posted on *Canvas (Course Content)*.

The textbook company who markets OWL (Cengage) has representatives on campus the first week of classes to help students get it working correctly. We will keep you informed on Canvas about when and where they are available. It is your responsibility to get the help you need to get your access to the homework correctly working.

### **Lectures:**

Prof. Holme’s section of Chem 177 meets at 11:00 am in Troxell Hall 1001. Students are expected to attend lecture and are responsible for knowing information that is provided in announcements that are given at the beginning of each lecture. Participation in lecture is monitored via the Top Hat response system with questions that may occur at any time in the class. You need a Top Hat account and to bring your device (probably your smart phone) with you to every lecture. You are required to accumulate 40 points from clicker questions. Probably around ~50 points worth of chances will be given to accumulate needed clicker points. Missing 2-3 classes does not greatly affect your clicker score. Clicker scores are based on 10% correctness and 90% participation so we are mostly rewarding the idea of engaging in the material. When something is new, it’s OK to make some mistakes – the key is to learn from them. That’s why the “correctness” is deemphasized. For TopHat questions where a number of students choose the incorrect answer, I may review concepts immediately in class. For those questions where most students have a correct answer, the discussion of the question will be available as a recording on Canvas after class.

**NOTE: Because Top Hat sends question to your phone, we will occasionally have “check” questions that will be improbable to answer correctly if you are not in class. I will also occasionally have students in class write out answers for questions on paper and turn them in. Answering Top Hat questions when you are not in class is a form of academic misconduct, see below for information about how Dr. Holme handles such cases.**

Lecture capture is part of the facilities in Troxell Hall, so you will be able to review class afterwards. The capture does NOT include what gets written on the chalkboards, however, so it provides a good way to review things that you may have missed, but is not 100% of the in-class experience. Prof. Holme also posts PDF versions (with some missing information) of his lectures BEFORE class, so you can have the option of printing these out so you do not need to try to copy all of the notes from the powerpoint portion of the lecture and can focus on the ways those notes are augmented in the class.

There is significant research that shows students who have computers open in class, even those who are trying hard to take notes on those computers, generally have lower performance in the class. Importantly, there is also evidence that students who sit near students with open computers are also adversely affected by the possibility of distraction. This aspect of device note-taking is not a problem for tablets that lay flat on the desktop. Given these research observations, Prof. Holme does not forbid computer-based note taking in class. He does, however, limit where people who are using screen-up computers in lecture may sit (so that classmates who wish to avoid distraction can find seats where computers are not open.) The specific geography of this system will be explained the first day of class and during announcements as the semester continues.

**Recitation:** On Thursdays you will meet in smaller groups with a teaching assistant (TA); **attendance is expected** at all recitation sessions. Recitation sessions will be used to discuss questions, work some end-of-chapter problems, and discuss ways in which the chemistry content connects to other science courses and to real-world issues. Discussion sections will have quizzes roughly 70% of the time, and when the quizzes will occur is noted during the pre-lecture announcements in class, so they are known in advance. Athletes and students who are away from campus for ISU games, matches, or club trips and cannot attend a recitation where a quiz occurs must discuss their options with Prof. Holme as soon as possible. At the end of the semester, the sum of the quizzes will be worth a maximum of 40 points towards of your grade. It is anticipated that there will be more opportunities to gain points than the maximum points available, so that missing a small number of the quizzes will not prevent you from getting a full score on the recitation assignments.

**Assignments:** There are two types of electronic assignments associated with this course. (1) As mentioned before, we will use an online homework system (OWL V2). (2) There are a handful of other electronic surveys and/or assignments that will show up in Canvas – and be announced in class. **All of these assignments will have connections in Canvas system, but in some cases the links do not include the gradebook – so the calendar function does not always catch the due dates. The announcements (and “Keeping Track” paper) before and at the start of class is the best source for due dates.**

The way that I manage this type of work is that there will be more points available in assignments than the maximum for that assignment. Thus, if you miss a small percentage of this type of work in the course you can still obtain maximum points. You cannot, however, get more than the maximum points. This scoring system will be addressed occasionally in class announcements and specifically near the end of the course, when I will do the aggregated scoring.

- OWL V2 homework will be worth a maximum of 50 points
- The set of additional electronic assignments will also be worth a maximum of 50 points

Don't wait until the due date to work on these assignments; try to spend some time **every day** on them and read ahead in your book.

**Late assignments** will not receive any points. No exceptions are made to this policy – athletes and others who know they will be traveling at the deadline should be sure they finish the assignment early.

**Writing Assignment:** Communication skills are routinely listed by companies who hire scientists and engineers as one of the most important and yet often underdeveloped skills that they seek in new employees. Therefore, Prof. Holme has at least one short writing assignment in all of his classes, even ones as large as Chem 177. In this case, the writing assignment will be associated with applying principles we learn in chemistry to problems of sustainability. Considered broadly, *sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations.* Science and engineering play an important role in building sustainability, and chemistry in particular provides the **molecular basis for sustainability.** We will focus on the ways molecular understanding is needed to address sustainability throughout the semester.

The writing assignment **will be brief**, because Prof. Holme must read them all to grade them. **Therefore, these written assignments may not be any longer than 500 words.** You need to include a bibliography, and those words do not count in the 500-word maximum. An important part of this assignment is deciding on an appropriate topic under the general heading of “the chemistry of pharmaceuticals or drugs of abuse”, one that will be capable of being described reasonably in such a short paper. The final draft of the paper is due **October 20 by 5:00 PM.** For the purpose of the writing assignment we will focus on the role “nanoparticles” play in products we buy and use, and what the environmental fate of such nanoparticles can be. We will approach this idea by introducing some aspects of “systems thinking” and identifying how we can think about the chemical composition of things we encounter in everyday life. The writing assignment itself requires you to cover at least two aspects of the nanoparticles that influence how they play a role in enhancing, or possibly threatening the sustainability of Earth and societal systems. There is not a rubric for scoring the paper. You need to write your paper to Dr. Holme, and present a convincing level of detail about your choice of topic that indicates you know what

you are writing about and why it's important to know about it. More details and guidelines about the writing assignment will be given in announcements in lecture. Writing assignments are submitted through Canvas and will automatically be checked for plagiarism. Cases of plagiarism are considered a form of academic misconduct.

**Exams:** In addition to the Final Exam (given during the week of Dec. 12-16), there will be **THREE** one-hour exams scheduled on the following *Wednesdays in class*: **September 14, October 12, and November 16**. These exams will be designed to be finished in 50 minutes, but because there is a 20-minute break for the room we will allow students to **take 5 extra minutes to finish the exam if needed**. Exams may have a mix of question styles including (a) multiple-choice questions, (b) open response mathematical questions and (c) open response conceptual questions. It is anticipated that there will be no make-up exams scheduled after an in-class exam has been completed. However, if the impact of the ongoing pandemic becomes significant, mechanisms for exams missed because of COVID-19 quarantines will be established. Every effort will be made to keep those who are isolating due to the pandemic to be able to keep up with exams and quizzes while they are isolating. Students are urged to be proactive and communicate to the instructors, in a timely manner, if anything prevents them from taking an exam. Athletes and students who are away from campus for ISU games, matches, or club trips and cannot take the exam as scheduled, must discuss their options with the instructors as soon as possible

If at all possible, exams will be returned to students during the recitation session on the Thursday following each exam. **The General Chemistry Office will not give out individual exams or scores.** Any requests for regrades must be submitted at the recitation where the exam is returned to students. A test paper handed in for regrade may have any question regraded, and students may gain or lose points in the regrading process. **Language translators and dictionaries are not allowed during quizzes and exams.**

**Accessibility:** Iowa State University 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](http://www.sas.dso.iastate.edu), by contacting SAS staff by email at [accessibility@iastate.edu](mailto: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.

**Academic Misconduct:** The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the [Dean of Students Office](#). See the Conduct Code at <https://www.policy.iastate.edu/policy/SDR#4.0> for more details and a full explanation of the ISU Academic Misconduct policies. Instances of suspected academic misconduct will be reported to the Dean of Students' office.

**Grades:** Your course final grade is based on 3 in class exams (240 pts total), recitation quizzes (40 pts), Assignments – noted earlier (100 pts), in-class (Top Hat) response system (40 pts), the writing assignment (60 pts) and the Final exam (120 pts) for a total possible 600 points. Based on this amount of available points, following tentative letter grade scale will be used to give your final letter grade:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
Above 560	540-559	520-539	495-519	470-494	445-469	420-444	390-419	360-389	330-359	300-320	Below 300

**Important:** These cutoff scores are expected to lead to a grade distribution that will be consistent with prior semesters and other sections of Chem 177 in this semester. Students near grade borderlines (typically within 2 points) are explicitly checked to determine if a higher grade is warranted – but even in these cases students often do not receive the higher

grade. Students who have missed a few classes are less likely to get bumped up to a higher grade. If you are 3 points or more from a cutoff, in a class this large there are many people closer to the higher grade than you, and you are not competitive to obtain the higher grade. Once established your final letter grade is **NOT negotiable**; once the final exam has been taken, there is no other way to obtain more points. Extra credit points are very unlikely in this course, but if they are offered, the activities will occur during the semester and will be made available to ALL students – individual requests to do extra credit cannot be granted.

**Important Course Policy:** It is the student's responsibility to check grades on Canvas. Any student who discovers an error in a grade on Canvas must contact the teaching assistant and bring the graded work to their TA **within 1 week** of receiving the returned graded work to have the grade corrected.

**Resources:** Important announcements, previous semesters' hour exams, this syllabus, lecture notes, and exam review sheets, as well as other useful information are posted on Canvas. Throughout the semester items will be added to Canvas. Deadlines are always noted in the pre-class "Keeping Track" sheet that is up before lecture starts, and is captured in lecture capture, so that is the authoritative source of deadlines. Canvas is NOT always a reliable source for deadlines, so do not rely on Canvas to remind you that something is due.

**Chemistry Help Center:** Teaching assistants are available in the **Martha E. Russell Chemistry Help Center and Resource Room, room 1761 Gilman**. This Center is staffed by general chemistry teaching assistants and is open M – R, 9 – 5, and F, 9 – 1. Answers to all previous quizzes and previous exams are on file in the Center. Resources in the Help Center are not to be removed from the room. For more help, visit Prof. Holme during his office hours.

**Supplemental Instruction (SI)** sessions and materials are provided by the Academic Success Center and are prepared by the SI leaders. They are not provided by the course instructors, but I will work with the SI instructors to help them provide high quality help particularly for the problems solving aspects of this class.

**How to e-mail your Chem 177 Instructors:** Email is often not a particularly rapid way to communicate, but Prof. Holme does make every effort to respond to emails. Your TA will fill you in about email availability when you meet them in Discussion. In many cases, you may have questions that other students can answer, and an email to instructors is not needed, so there will be alternative communication avenues associated with this course. Perhaps the best way to get quick answers are "Discussion Boards" within Canvas. Prof. Holme will help build some useful discussion threads, and he does monitor them as well and will step in to clear up confusion when he sees it.

**Problems and Questions:** Please check on *Canvas* to see if your question or issue can be answered under the [Frequently Asked Questions \(FAQ\) section](#). If you are having issues with **Canvas** or the electronic grade-book, contact your recitation TA directly. If you are having issues with **OWL V2**, visit: <https://www.cengage.com/student-training/owlv2/canvas/ia-yes/> (if the issue is not resolved with the OWL support, then please contact Prof. Holme with the detailed description of the issue). Note that we will not be able to solve technical issues such as registration, access to the internet, etc. You are however encouraged to let me know if you are unable to complete an assignment due to technical difficulties.

**Free Speech:** 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.

**Harassment and Discrimination:** Iowa State University does not discriminate on the basis of race, color, age, ethnicity, religion, national origin, pregnancy, sexual orientation, gender identity, genetic information, sex, marital status, disability, or status as a U.S. Veteran. Inquiries regarding non-discrimination policies may be directed to Office of Equal Opportunity, 3410 Beardshear Hall, 515 Morrill Road, Ames, Iowa 50011, Tel. 515-294-7612, Hotline 515-294-1222, email [eooffice@iastate.edu](mailto:eooffice@iastate.edu)

**Religious Accommodation:** Iowa State University welcomes diversity of religious beliefs and practices, recognizing the contributions differing experiences and viewpoints can bring to the community. There may be times when an academic requirement conflicts with religious observances and practices. If that happens, students may request the reasonable accommodation for religious practices. In all cases, you must put your request in writing. The instructor will review the situation in an effort to provide a reasonable accommodation when possible to do so without fundamentally altering a course. For students, you should first discuss the conflict and your requested accommodation with your professor at the earliest possible time. You or your instructor may also seek assistance from the [Dean of Students Office](#) at 515-294-1020 or the [Office of Equal Opportunity](#) at 515-294-7612.

**Course Goal/Learning Outcome:** Upon successful completion of this course, students will have mastered fundamental concepts in general chemistry and will be able to successfully approach Chem 178 (the second half of our general chemistry course). Chem 177 will allow the student to pursue upper level chemistry courses as well as specialized studies in other fields of science and engineering.

**Learning Objectives:** Learning objectives for this course are built with three aspects in mind (they are sometimes called tri-partite learning objectives as a result. The idea is that when we consider chemical skills and concepts we need to know (a) what they are; (b) how we know them; and (c) why they matter. The specific tri-partite learning outcomes are:

<b>Knowledge: What We Know</b>	<b>Evidence: How We Know It</b>	<b>Relevance: Why It Matters</b>
<b>1K:</b> Benefits and risks of chemicals Explains the concept of “the dose makes the hazard”	<b>1E:</b> How are toxicity and exposure measured?	<b>1Ra:</b> At what level is risk acceptable? <b>1Rb:</b> We have to make decisions about chemicals and their use.
<b>2K:</b> Solve chemical problems with scientific data (graphical or tabulated data)	<b>2Ea:</b> Graphical and tabulated data come from measurements <b>2Eb:</b> Measurements have precision and accuracy associated with instruments <b>2Ec:</b> Error must always be kept in mind	<b>2Ra:</b> Need to be able to know which chemicals are more dangerous than others <b>2Rb:</b> Need to know if ways to measure are adequate to use the chemical knowledge
<b>3K:</b> Describe fundamental components of chemical structure	<b>3E:</b> Mass spectrum shows molecular ion peaks, number of isotopes, and the relative abundances	<b>3R:</b> Differences in isotopes can cause changes in physical and chemical properties of a chemical, thus changing their uses and applications
<b>4K:</b> Explain fundamental features of chemical reactions (balanced equations, stoichiometric problems involving moles, mass, # of molecules, limiting reactant, theoretical yield, and % yield)	<b>4E:</b> The method of continuous variation is an example of a way of knowing stoichiometric ratios	<b>4Ra:</b> Knowing amounts of reactants can lead to methods to reduce waste – <i>green chemistry</i> . <b>4Rb:</b> Be prepared for organic chemistry where reaction equations do not include stoichiometry.
<b>5K:</b> Explain chemical reactions in solution (precipitation, acid-base, redox)	<b>5Ea:</b> Observable to the eye changes (like color change) are not the only ways of identifying and quantifying reactions. <b>5Eb:</b> Modern titrations include pH or conductivity measurement (or	<b>5Ra:</b> We need to know trace contaminant levels in water because it’s important for specific health and environmental consequences.

	other electrochemical measurements)	<b>5Rb:</b> Nitrates and Lead in drinking water can pose health hazards
<b>6K:</b> Describe the role of chemistry in water resources for human use and the importance of water for sustainability	<b>6E:</b> Instruments (from pH, conductivity, oxygen meters to chromatographic instruments) and analytical techniques allow purification and quality measurement of water	<b>6Ra:</b> Water quality is directly related to human health and environment
<b>7K:</b> Explain the central role of energy in chemistry and chemical reactions (measurement of energy using calorimetry)	<b>7Ea:</b> Calorimetry allows the measurement of heat involved in a chemical reaction (heat transferred to or from a substance) <b>7Eb:</b> Measures of energy transformation efficiency (heat to work) are a key part of using chemistry for energy	<b>7Ra:</b> Energy implications in making products we use and the ideas of embodied carbon and carbon footprints <b>7Rb:</b> Food sciences and dietary energy
<b>8K:</b> Describe atomic structure and its importance in understanding chemistry	<b>8Ea:</b> Characteristic chemical and physical properties can be observed, measured, and then modeled using a combination of spectroscopy and quantum models <b>8Eb:</b> Historic experiments such as photoelectric effect	<b>8Ra:</b> Atoms are building blocks of matter <b>8Rb:</b> Atomic structure explains different chemical and physical properties of matter (e.g. periodicity)
<b>9K:</b> Explain the origin and implication of chemical bonding	<b>9Ea:</b> Concept of valence can be measured <b>9Eb:</b> Strengths of interactions of atoms and molecules in materials can be measured	<b>9Ra:</b> How do different strengths of interaction lead to different properties that can be used? <b>9Rb:</b> Epoxy vs. glue (bonding vs. intermolecular forces) <b>9Rc:</b> Proteins and biochemicals
<b>10K:</b> Describe fundamental characteristics of molecules and molecular bonding	<b>10E:</b> Spectroscopic measures that inform our understanding of molecular scale and bulk properties	<b>10R:</b> Water has unique properties that can be understood using ideas related to strengths of interactions.
<b>11K:</b> Explain characteristics of gases and how they are different than condensed forms of matter (liquids and solids)	<b>11Ea:</b> There are measures that are not dependent on the identity of the gas and others that are dependent on the identity. <b>11Eb:</b> Measures of bulk vs. molecular properties (e.g. measuring pressure/temperature vs. spectroscopic properties)	<b>11R:</b> Understanding the behavior of the Earth's atmosphere depends on both common gas behaviors (ideal gases as a model) and unique gas behaviors (what makes something a greenhouse gas).
<b>12K:</b> Explain the concept of intermolecular forces	<b>12E:</b> Measurements of viscosity, surface tension, phase changes	<b>12Ra:</b> Chemical basis of life such as how cells are organized is closely tied to the nature of intermolecular forces. <b>12Rb:</b> Understanding how coronaviruses infect cells and variants change the process.

Dates	Textbook Chapter Coverage	Deadlines and activities
Aug 22 - 26	<b>Ch. 1:</b> Chemical Foundations <b>Ch. 2:</b> Atoms, Molecules and Ions	Get Textbook and OWL access Get TopHat registered for Chem 177
Aug 29 – Sep 2	<b>Ch. 2:</b> Atoms, Molecules and Ions	TopHat in class counts for points
Sep 5 - 9	<b>Sep 5: Labor Day – No Classes</b> <b>Ch. 3:</b> Stoichiometry	
Sep 12 – 16	<b>Ch. 3:</b> Stoichiometry	Test 1: Sep 14
Sep 19 – 23	<b>Ch. 4:</b> Solution Stoichiometry	
Sep 26 – 30	<b>Ch. 4:</b> Solution Stoichiometry	
Oct 3 - 7	<b>Ch. 5:</b> Gases	
Oct 10 – 14	<b>Ch. 5:</b> Gases <b>Ch. 6:</b> Thermochemistry	Test 2: Oct 12
Oct 17 - 21	<b>Ch. 6:</b> Thermochemistry	<b>Paper Due Oct 20: 5:00 PM</b>
Oct 24 – 28	<b>Ch. 7:</b> Atomic Structure and Periodicity	
Oct 31 – Nov 4	<b>Ch. 7:</b> Atomic Structure and Periodicity <b>Ch. 8:</b> Bonding General Concepts	
Nov 7 – 11	<b>Ch. 8:</b> Bonding General Concepts	
Nov 14 - 17	<b>Ch. 8:</b> Bonding General Concepts <b>Ch. 9:</b> Covalent bonding orbitals	Test 4: Nov 16
<b>Nov 21-25</b>	<b>Thanksgiving Break: No Lectures</b>	
Nov 28 – Dec 2	<b>Ch. 9:</b> Covalent bonding orbitals <b>Ch. 10:</b> Liquids and Solids	
Dec 5 – 9	<b>Ch. 10:</b> Liquids and Solids	Optional Test: Dec 9
<b>Dec 12–16</b>	<b>Final Exam:</b> A 2-hour <b>comprehensive</b> final exam will be scheduled as a group final sometime during the week of December 13–16. The time will be announced by the Registrar in late September or early October. <b>Do not make travel arrangements to leave for winter break or vacation prior to the end of finals week until the date and time of final exam for Chem 177 is published by the ISU Registrar's Office. To check the update click <a href="http://www.registrar.iastate.edu/students/exams/fallexams">http://www.registrar.iastate.edu/students/exams/fallexams</a></b>	

\* Students who have three or more finals on the same calendar day may request to reschedule a final. The instructor of the course having the smallest number of students is responsible for arranging an alternate examination time for the student unless make-up exam times are available in one of the other courses. To reschedule, the student must notify the instructor prior to the last day of class before the beginning of dead week so the instructor has time to make appropriate arrangements.