

## General Chemistry II CHEM 1780

### Section 1 Fall 2024 Recitation Sections A-L

CHEM 1780 is the second semester of a full-year rigorous introduction to and overview of fundamental chemical principles. This course will help you understand everyday observations from a chemical point of view, how chemistry is indeed the “central science,” and how a solid understanding of chemistry helps to improve our lives and the life of our planet. You will continue to acquire and enhance your chemical vocabulary, develop skills in using the language and formulae of chemistry to perform quantitative calculations, and will be able to apply fundamental chemical concepts to estimate and predict various phenomena. Current research topics and applications will be explored to help demonstrate the relevance of chemistry. The problem-solving and analytical skills utilized in this course will help prepare you for critical thinking and problem-solving in your college and professional career. This course will prepare you for your future chemistry and science coursework.

In particular, CHEM 1780 involves the study of chemical reactions, their kinetic and thermodynamic characteristics. Acid-base and reduction-oxidation (redox) reactions will be emphasized. The course concludes with a discussion of nuclear chemistry.

**Catalog:** Continuation of 1770. Recommended for physical or biological science majors, chemical engineering majors, and all others intending to take 3000-level chemistry courses.

### Lectures/Recitations/Hour Exam/Final Exam

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

**Lectures:** Tuesday & Thursday 11 - 11:50 am, GILMAN 1002

**Recitations:** meet on Fridays (sections A-L)

Check the schedule for your section: <https://classes-new.iastate.edu> )

**3 in-class exams:** Sep 24 (Tuesday), Oct 22 (Tuesday), and Nov 21 (Thursday).

See Exam policies under *Assessments*.

**Final Exam: Wednesday, Dec 18, 9:45 - 11:45 am.** See Final Exam policies under *Assessments*.

### Instructor Information

**Instructor:** Dr. Julia Zaikina

**E-mail:** [chem1780-1q@iastate.edu](mailto:chem1780-1q@iastate.edu)

**Office Hours:** Monday & Wednesday, noon – 1 pm, Hach 2126, or by appointment. Please communicate via e-mail at least 24 hours (48 hours on weekends) prior to any appointment and indicate at least two scheduling options.

**Head TA:** Mohammad Walid

**E-mail:** [chem1780-1q@iastate.edu](mailto:chem1780-1q@iastate.edu)

**Recitation TAs office hours:** check <https://www.chem.iastate.edu/chemistry-help-room> for updated hours in the Martha E. Russell Chemistry Help Center in 1761 Gilman Hall.

#### How to contact Instructor or Head TA:

- Use the **Chat** 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** ([chem1780-1q@iastate.edu](mailto:chem1780-1q@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 your recitation TA are formal communications. Therefore, proper written etiquette is expected. The *Subject line* on your email must contain "CHEM 1780" 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 feel are of interest to the class will be addressed during a lecture or by an announcement via Canvas.

## Course Objectives and Outcomes

By successfully completing CHEM 1780, 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.
- to understand fundamentals of nuclear decay processes.

## Course Prerequisites

CHEM 1770, CHEM 1770L, or CHEM 1670.

If you took CHEM-1630 or CHEM-1670 but are required to take a full year of general chemistry course (due to change of major or other reasons), see additional guidelines on the last page of the Syllabus.

CHEM 1780 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 1770 or CHEM 1670. 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 1780) that you may review as the semester progresses. To help you to review these topics, you are also encouraged to complete the OWL-v2 assignments from respective chapters for practice (no credit).

- *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)

## Grading Policy

Hours Exam I	(Sep. 24)	100 pts	18%
Hours Exam II	(Oct. 22)	100 pts	18%
Hours Exam III	(Nov. 21)	100 pts	18%
Recitation Worksheets (10 pts each)		150 pts	10%
			(best 10 outcomes)
TopHat Questions (based on a cumulative Top Hat score of 75%)			5%
Homework OWLv2 Mastery Problems		160 pts	13%
			(based on 150 pts)
Final Exam (cumulative)		100 pts	18%
<b>Total</b>			<b>100%</b>

Students will retain all points earned for TopHat Lecture Questions and OWLv2 Mastery Problems, which may result in bonus points toward the final grade. The bonus points will be applied at the end of the semester.

Tentative letter grade assignments will be as follows: "A," 88-100%; "B," 74-88%; "C," 74-60%; "D," 60-48%; "F", 0-48%. Important: final grades are based solely on graded work and are NOT negotiable. +/- grading will be applied for the final grade, but these specific ranges will be determined once all scores for the academic semester are entered.

## Course Format

In-person lectures and recitations over 15 weeks. Lectures will follow the tentative course schedule - any changes will be announced during the lecture periods. Students are expected to read the assigned text material before coming to lecture, participate actively during lecture and recitation, complete homework and recitation assignments before the deadline, and come to the scheduled exams.

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 (**Panopto Recordings**).

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.

Chem 1780L students must be enrolled in or have credit for 178.

Recitations are directed by teaching assistants (TAs) and are intended for discussion of problems concerning the week's topics. During each recitation (15 total), there will be a recitation worksheet. TAs will hold office hours in the Martha Russell Chemistry Help Center, 1761 Gilman Hall.

The Canvas page for CHEM 1780 contains 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 OWLv2 assignments, 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 1780 during Academic Year 2020-2021.

To show proper respect to your colleagues and the instructors, put aside the ISU Daily, do not use iPads, iPods, laptops, or other PDA devices for messaging, Facebook, Twitter, etc., internet browsing, streaming videos, etc. during lectures and recitations. Please refrain from any disruptive activities in the classroom, which might affect other students or distract the instructor. Research studies have shown a clear correlation between the use of laptops for entertainment in large lecture settings and LOWER student learning in the lecture environment; students around a laptop user also pay less attention to the content of the lecture. Your instructors and classmates are permitted and encouraged to ask you to discontinue distracting behavior. To help promote a good learning environment for all, please be respectful in your behavior toward your fellow students and your instructors.

## Required Textbook and Materials

1. Textbook: **Chemistry (10<sup>th</sup> Edition)**, S.S. Zumdahl, S.A. Zumdahl, D.J. DeCoste, G. Adams (2018), Cengage Learning (ISBN: 978-1-305-95740-4). E-book is available via Immediate Access ONE.
2. Mobile device or web-enabled device to use **TopHat**.
3. **OWLv2** online homework (available via Immediate Access ONE program and can be accessed via Canvas).
4. An inexpensive scientific, non-programmable (no data storage) **calculator** with basic functions including logarithms and exponential functions, like  $n^x$ ,  $\log x$ ,  $10^x$ ,  $e^x$ , and  $y^x$  functions.

## Course Details

- **Textbook:** Chemistry (10<sup>th</sup> Edition), Steven S. Zumdahl, Susan A. Zumdahl, Donald J. DeCoste. *Cengage Learning*. ISBN-10: 1-305-95740-7; ISBN-13: 978-1-305-95740-4

This is the same book that was used in CHEM 1770 during the Fall 2023 or Spring 2024 semesters and prior access should still be active. For students who did not take CHEM 1770 using this book: this text is

part of the Immediate Access ONE program at Iowa State, which means that by enrolling in this course you will have the e-book version and on-line homework system (OWL-v2) included as part of your U-Bill.

**This course is enrolled in the Iowa State University *Immediate Access ONE Program*. We will be using OWL-v2 for homework assignments.**

*What is Immediate Access ONE?*

This is a digital-first, flat-rate course materials program launching Fall 2024 for all undergraduate students, designed to boost your success. Immediate Access ONE provides a predictable cost of \$259 per semester for all undergraduate students, regardless of your major. On the first day of classes of every semester, you can easily access and start using your required course materials by simply logging into your Canvas account.

You are automatically enrolled in this program, so you don't need to sign up.

*What is the cost of this program and how is the student billed?*

Each undergraduate student is assessed a \$259 charge in the Fall and Spring Semester. The charge is \$69 for Winter and Summer terms. This charge includes all required print and digital titles regardless of major. On your U-Bill in Student Workday you should see a transaction description "University Bookstore-Immediate Access ONE Program-Textbooks".

*Can I opt out of Immediate Access ONE?*

Yes, students have the option to opt out of Immediate Access ONE via Canvas within the first 10 days from the start of classes. If you opt out during this period, you will receive a refund. If you change your mind, you can also re-enroll in Immediate Access ONE via Canvas within the first 10 days of classes. Please note that the opt out button may not appear until shortly before classes start as when it shows up can depend on when your instructor creates the Canvas course or has published it.

*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 instructions 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](mailto:immediateaccess@iastate.edu) Do not pay for a new code. Here is a video link for *How to Register for OWLv2 in Canvas*: <https://startstrong.cengage.com/owlv2-canvas-ia-yes/>
3. An ebook is included and accessed within the OWLv2 Cengage Courseware only. There is no VitalSource ebook accessible through the Immediate Access Course Materials tool.

*What if I drop the course?*

Digital items are automatically activated and deactivated in your Canvas account as you change courses. Approximately 24 hours of your course change, you will gain/lose access to those textbooks.

Find more information on Immediate Access at <https://www.isubookstore.com/immediate-access-one-students>

For questions about Immediate Access, please e-mail [immediateaccess@iastate.edu](mailto:immediateaccess@iastate.edu)

*How can I get help with tech issues with OWL-v2?*

- Use comprehensive self-support materials, including videos, documents, and links that help with every problem or process they could possibly have! This is going to be the fastest method during the busy Back-to-School season. This student-centered help can be found at <https://startstrong.cengage.com/>
- Virtual Office Hours: from Aug. 12 to Sep. 16, 2024 (except Labor Day).  
Monday/Wednesday: 1-3 pm CST (except Memorial Day)  
Tuesday/Thursday/Friday: 9-11 am CST  
Zoom link: [https://cp.cengage.com/OfficeHours\\_MidWest\\_Mindera](https://cp.cengage.com/OfficeHours_MidWest_Mindera)
- Cengage In-Person Help Desk Hours, Location: Gilman 1761 (Chemistry Help Room)  
Monday, Aug. 26, 2024, 11 am – 3 pm CST  
Tuesday, Aug. 27, 10 am – 2 pm
- Call Tech Support at 800-354-9706 or go to [www.cengage.com/support](http://www.cengage.com/support)

If you have difficulties with Cengage technology or accessing your Cengage account, fill out a tech support ticket by clicking on the Tech Support link in your course or by going to [www.cengage.com/support](http://www.cengage.com/support). The agent will give you a case number at the beginning of your call, please make note of it. If you want to talk to an agent live you can call in: 800-354-9706. Have your ticket number ready as they will ask for it. There is also 24/7 chat.

Do not ask your instructor for technical help—this will just delay the resolution to your issue! If your issue is not resolved while on the phone, you can email Tricia Gustafson at [tricia.gustafson@cengage.com](mailto:tricia.gustafson@cengage.com) the ticket number and she can escalate it for you.

- **Top Hat.** We will use Top Hat in this course. Top Hat is available to Iowa State University students at no additional cost. To use Top Hat, students must click the *Top Hat 1.3* link in Canvas the first time they access the Top Hat course. Failure to do so will cause the student to be dropped from the Top Hat course each night, and their grades and attendance will not sync back to Canvas. Once a student establishes the connection by clicking the link, all previous scores will come back and be synced to Canvas.

To access your Top Hat course, click the *Top Hat 1.3* link in Canvas and follow the prompts to connect to your Top Hat course. This must be completed at least once per course, or you will be automatically removed from the course roster during nightly synchronization.

If you get removed from Top Hat, you can regain access by clicking the *Top Hat 1.3* link in Canvas. This will restore your responses and grades.

If you have not previously used Top Hat, you will be prompted to create a new account the first time you click the *Top Hat 1.3* link in your Canvas course. Please note that you must create your Top Hat account using a web browser. You cannot create an account using the mobile app.

Students must click the Top Hat link in their Canvas course navigation to join the Top Hat course. Then, students can access the course directly through the Top Hat mobile app or via the link in Canvas.

Our TopHat Course Join Code/Course ID is 591535.

For assistance with Top Hat, please contact their Support Team directly via E-mail – [support@tophat.com](mailto:support@tophat.com) or through the in-app support button or by calling 1-888-663-5491. When reaching out for technical support, please be prepared to provide your course join code and specific user information as required to help troubleshoot any issues.

Bring your device to all lectures; failure to bring a device to class will result in 0 points for that day. Absolutely no exceptions. The device used for TopHat can be a smartphone, a tablet, or a personal computer. A regular phone can be used to submit answers to multiple-choice, word, or numeric questions.

Sharing the attendance code with classmates who are absent from class, having a classmate give you the attendance code while you are absent from class, submitting answers while absent from class, sharing answers with students who are not in class, etc. constitute academic misconduct.

➤ **Useful Weblinks:**

Immediate Access ONE: <https://www.isubookstore.com/immediate-access-one-students>  
Periodic Table: <http://www.webelements.com/>  
Interactive simulations: <https://phet.colorado.edu/en/simulations/category/chemistry>

## Assessments

- **Exams:** Three in-class exams are scheduled for **Sep. 24 (Tuesday)**, **Oct. 22 (Tuesday)**, and **Nov. 21 (Thursday)**. The exam format is multiple choice. You will also be provided with a one-page Information Sheet containing useful equations, conversions, and data.

Question and Answer sessions for each exam are *tentatively* scheduled during evenings on Mondays, Sep. 23, Oct. 21, and Nov. 18. As these dates, times, and locations are finalized, this information will be updated and posted on Canvas.

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. *A student missing two exam scores will be asked to drop the course.*

An early exam will be scheduled for athletes and students who are away from campus for ISU games, matches, or club trips may request alternate arrangements for taking the exam. If you have a valid reason to miss an exam, you must immediately contact instructor (not your TA). **Exam accommodation requests must be made a minimum of 7 business days prior.**

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.

- **TopHat Questions:** will be given during class and will count for credit starting on the first day of class, Tuesday, August 27th. TopHat questions are worth 5% toward your course grade. Each question counts as 1 point (0.25 for correctness + 0.75 for participation). To receive full credit at the end of the semester you must have a cumulative score of 75% or higher in TopHat App. For example, if you obtain 75% you will receive 5% toward your course grade, if you obtain 60% you will receive 4% toward your course grade, etc. The cumulative TopHat score exceeding 75% may result in bonus points. TopHat scores will be synched with the Canvas gradebook at the end of the semester. You may monitor your performance directly on the TopHat app.
- **OWLv2 Mastery Problems.** These mastery problems are designed to help you learn a topic before moving on to the next one. Login to the OWLv2 homework system through the Canvas F2024-CHEM-1780-1 course page (See the Module Cengage Information for your first access). There will be 14 OWLv2 assignments throughout the semester. Each assignment is open for about 1-2 weeks. You may work with others, but completing



assignments independently will enhance your learning. You may use the F2024-CHEM-1780-1 Canvas course content and your notes. **Late OWLv2 assignments will receive a 10% penalty if completed after the posted due date, but before the date of the respective exam. OWLv2 assignments become unavailable after the respective exam. See the Canvas course page and/or OWLv2 homework system for the due dates.** 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(s) or alone and are meant to stimulate questions and discussions – these worksheets are not quizzes. You may work with a partner(s), but each student must hand in his/her/their own worksheet at the end of the recitation period. Out of 15 worksheets, the best 10 worksheet scores will count toward the final grade. No make-up of any missed worksheet is allowed. A blank copy and answers of each worksheet will be posted on the Friday after recitations are completed.
- **Final Exam:** A comprehensive exam is scheduled for Wednesday, December 18<sup>th</sup>, 9:45 - 11:45 am. No final exams will be administered *earlier* than this date – please arrange end-of-semester travel plans accordingly. The final exam will consist of multiple-choice questions. A final exam review session will be held the day/evening prior to the exam date; the exact date, time, and location will be announced in due course. Alternative final exam times will only be scheduled for students with a conflicting final exam time or those with three or more finals scheduled for the same day. **There will be no exceptions.** The ISU final examinations policy will be followed absolutely: <https://www.registrar.iastate.edu/students/exams>

## Resources and academic support

Students who are struggling to succeed in CHEM 1780-1 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](#). Students should work closely with their academic adviser to implement a plan for success.

**TA Help Center:** 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 MTWR from 9 am to 5 pm and Fridays from 9 am to 1 pm. The Help Center is staffed by general chemistry teaching assistants. Solutions manuals and general chemistry textbooks, study guides, and workbooks are available. 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.

<https://www.chem.iastate.edu/chemistry-help-room>

**Supplemental Instruction (SI):** Supplemental Instruction (SI) is offered for this course. SI sessions are group study opportunities, scheduled three times per week. These sessions are facilitated by an SI Leader. Students should attend SI sessions to ask questions about course content and to develop

learning/study strategies. Students who participate in SI sessions typically earn higher final course grades and exam grades than students who do not participate in SI. SI attendance is voluntary, and it is not a substitute for class attendance. For information about the days, times, and locations for SI sessions, refer to the SI website: [www.si.iastate.edu](http://www.si.iastate.edu) You can watch a brief video created by SI Program staff to learn more about SI delivery: [https://youtu.be/FB\\_5MK17kw8](https://youtu.be/FB_5MK17kw8)

## Important Course Policies

**Late Assignments and Deadline Extensions:** The 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 with 10% penalty (if submitted before the corresponding date of Exam (see Assessments)). 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.

### Expectations for all Examinations

- You must work independently unless instructed differently.
- You will need a scientific calculator with basic functions, including logarithms and exponential functions. 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

OWLv2 Mastery Problems are automatically graded, and scores are posted on Canvas gradebook and 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 automatically by instructor and Head TA and scores should be posted on Canvas gradebook. The exams will be returned during the following recitation periods. TopHat questions score will be synched with the Canvas gradebook at the end of the semester. You may monitor your performance directly on the TopHat app.

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 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 OWLv2 Mastery Problems before their respective due dates, there are opportunities to earn bonus points.

### Course Evaluations

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

**Grading Policies regarding Incomplete Grades:**

<https://catalog.iastate.edu/academics/grading/#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 1780 site.
- Read all essential documents – course syllabus and course schedule.
- Identify and establish the communication channels provided – Canvas Chat and e-mail
- Confirm technical requirements – so that you can access all the materials (OWL-v2, E-book, TopHat)
- 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.
- Regularly check grades and announcements on the Canvas course webpage, OWL-v2 homework system and TopHat App.

### Tentative Schedule of Topics

Week	Date	Topics / Activity	Text Reading	OWLv2*	Videos (Modules)
1	Aug 27	Introduction; Kinetics	Ch. 12.1	OWL 01	Mod 1: V1-V2
	Aug 29	Kinetics	Ch. 12.2, 3		Mod 1: V3-V4
	Aug 30	Recitation (Worksheet #1)			
2	Sep 3	Kinetics	12.4, 6	OWL 02	Mod 1: V5-V6
	Sep 5	Kinetics	12.5, 7		Mod 1: V7-V8
	Sep 6	Recitation (Worksheet #2)			
3	Sep 10	Equilibria	13.1-4	OWL 03	Mod 2: V1-V3
	Sep 12	Equilibria	13.5		Mod 2: V3-V4
	Sep 13	Recitation (Worksheet #3)			
4	Sep 17	Equilibria	13.5, 7	OWL 04	Mod 2: V5-V6
	Sep 19	Equilibria	13.5, 6		Mod 2: V7
	Sep 20	Recitation (Worksheet #4)			
5	Sep 24	Hour Exam I (Kinetics, Equilibria)			
	Sep 26	Acids and Bases	14.1-3, 6	OWL 05	Mod 3: V1-V3
	Sep 27	Recitation (Worksheet #5)			
6	Oct 1	Acids and Bases	14.1-3, 6, 7	OWL 06	Mod 3: V4-V6
	Oct 3	Acids and Bases	14.1-3, 6, 7		Mod 3: V6-V7
	Oct 4	Recitation (Worksheet #6)			
7	Oct 8	Acids and Bases	14.9-11	OWL 07	Mod 3: V8-V9
	Oct 10	Aqueous Equilibria	15.1, 2, 4		Mod 4: V1-V2
	Oct 11	Recitation (worksheet #7)			
8	Oct 15	Aqueous Equilibria	15.2, 3	OWL 08	Mod 4: V2-V3
	Oct 17	Aqueous Equilibria	11.1-3; 16.1		Mod 4: V4-V5
	Oct 18	Recitation (Worksheet #8)			
9	Oct 22	Hour Exam II (Equilibria, Acids and Bases, Aqueous Equilibria)			
	Oct 24	Electrochemistry	4.9, 10	OWL 9	Mod 5: V1-V2
	Oct 25	Recitation (Worksheet #9)			
10	Oct 29	Electrochemistry	18.1-3	OWL 10	Mod 5: V3-V4
	Oct 31	Electrochemistry	18.1, 2, 5		Mod 5: V5
	Nov 1	Recitation (Worksheet #10)			
11	Nov 5	Electrochemistry	18.7, 8	OWL 11 OWL 12	Mod 5: V6
	Nov 7	Thermodynamics	17.1-3		Mod 6: V1-V2
	Nov 8	Recitation (Worksheet #11)			
12	Nov 12	Thermodynamics	17.5, 6	OWL 12 OWL 13	Mod 6: V3-V4
	Nov 14	Thermodynamics	17.4, 7		Mod 6: V5-V6
	Nov 15	Recitation (Worksheet #12)			
13	Nov 19	Thermodynamics	17.8-10; 18.3	OWL 14	Mod 6: V7-V8
	Nov 21	Hour Exam III (Electrochemistry, Thermodynamics)			

Week	Date	Topics / Activity	Text Reading	OWLv2*	Videos (Modules)	
	Nov 22	Recitation (Worksheet #13)				
Nov 25-29		Thanksgiving Break				
14	Dec 3	Thermodynamics Nuclear Chemistry	19.1, 3, 4	OWL-14		
	Dec 5	Nuclear Chemistry	19.3, 5, 6	OWL 15	Mod 7: V1-V3	
	Dec 6	Recitation (Worksheet #14)				
15	Dec 10	Nuclear Chemistry	19.5, 6		OWL 15	Mod 7: V5
	Dec 12	Nuclear Chemistry Course Summary				
	Dec 13	Recitation (Worksheet #15)				
	Dec 18	Final Exam (Comprehensive):			Wednesday, Dec 18, 9:45 - 11:45 am	

**\* Refer to due dates for OWL-v2 assignments on Canvas and/or OWL-v2 on-line system**

## Syllabus Statements

**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.

No employee, student, applicant, or campus visitor is compelled to disclose their pronouns. Anyone may voluntarily disclose their own pronouns.

**Academic Dishonesty:** The class will follow Iowa State University's policy on academic misconduct ([5.1 in the Student Code of Conduct](#)). Students are responsible for adhering to university policy and the expectations in the course syllabus and on coursework and exams and for following directions given by faculty, instructors, and ISU Test Center regulations related to coursework, assessments, and exams. Anyone suspected of academic misconduct will be reported to the [Office of Student Conduct in the Dean of Students Office](#). Information about academic integrity and the value of completing academic work honestly can be found in the [Iowa State University Academic Integrity Tutorial](#).

**Accessibility Statement:** Iowa State University is committed to advancing equity, access, and inclusion for students with disabilities. Promoting these values entails providing reasonable accommodations where barriers exist to students' full participation in higher education. Students in need of accommodations or who experience accessibility-related barriers to learning should work with Student Accessibility Services (SAS) to identify resources and support available to them. Staff at SAS collaborate with students and campus partners to coordinate accommodations and to further the academic excellence of students with disabilities. Information about SAS is available online at [www.sas.dso.iastate.edu](http://www.sas.dso.iastate.edu), by email at [accessibility@iastate.edu](mailto:accessibility@iastate.edu), or by phone at 515-294-7220.

**Discrimination and Harassment:** 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).

**Prep Week:** This class follows the Iowa State University Prep Week policy, as noted in the ISU Policy Library and the Senior Vice President and Provost's website.

**Mental Health and Well-Being Resources:** At Iowa State, we're committed to your success and well-being. As a Cyclone, you can access 24/7 resources, services, and people dedicated to helping you achieve your goals and be your best in and out of the classroom. Whether you need academic support or just someone to talk to, we're here for you at Cyclone Support ([cyclonesupport.iastate.edu](http://cyclonesupport.iastate.edu)). If you are struggling emotionally and need support, there's confidential help available 24/7/365. You can call or text 988 or use the chat at [988lifeline.org](http://988lifeline.org).

**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.

**Contact Information for Academic Issues:** If you are experiencing, or have experienced, a problem with any of the above statements, email [academicissues@iastate.edu](mailto:academicissues@iastate.edu)

## **Guidelines for students who took CHEM 1630 or 1670 but need a full year of general chemistry**

### **Continuing into Chem 1780**

- Students who earn B- or below in Chem 1630 or 1670 should take Chem 1770/1770L followed by 1780/1780L.
- Students who took Chem 1630 or 1670 and have weak algebra or numerical problem-solving skills should take Chem 1770/1770L followed by 1780/1780L. Chem 1780 is much more math intensive than Chem 1630, 1670, or 1770.
- Students who earn B or better in Chem 1630 or 1670 can take Chem 1780 as long as they have strong algebra skills.

Students should be warned that they will need to learn some Chem 1770 material to succeed in Chem 1780. The necessary material that the students should learn/review follows:

Text: Chemistry, Zumdahl, Zumdahl, and DeCoste (ISBN-13: 978-1305957404) Chapter 4 Types of Chemical Reactions and Solution Stoichiometry Chapter 6 thermochemistry

### **Continuing into Chem 1780L**

- Students who earned B- or lower in Chem 1630 or 1670 should enroll in Chem 1770 AND Chem 1770L.
- Students who earned B or higher in 1670 but did not take Chem 1670L should take Chem 1770L prior to taking Chem 1780L. (It is NOT recommended that students take Chem 1670L to prepare for Chem 1780L.)
- Students who earned B or higher in Chem 1670 and did take Chem 1670L may take Chem 1780L (this is not perfect – but it is the best course for students who already have Chem 1670L).

### **Continuing to Chem 3310**

Students who took Chem 1670 followed by 1780 and continue to Chem 3310 should be warned that they need to learn/review some Chem 1770 material to succeed in Chem 1780. The necessary material that the students should learn/review follows:

Text: Chemistry, 10th edition, Zumdahl, Zumdahl, and DeCoste, Cengage (ISBN-13: 978-1305957404) Chapter 3 Sections 10 - 12 (limiting reactants concepts and calculations), Chapter 8 (chemical bond models and molecular shapes), Chapter 9 (molecular orbitals) and Chapter 10 Sections 1, 2, 8, & 9 (Intermolecular Forces, phase transitions), Chapter 13 (solutions: properties & energetics) Section 1 – 4.



## **Guidelines for engineering students who took 1670 but need a full year of general chemistry**

### **Continuing into Chem 1780**

- Students who earn B- or below in Chem 1670 should take Chem 1770/1770L followed by 1780/1780L
- Students who earn B or better in Chem 1670 can take Chem 1780 and they should be warned that they will need to learn some Chem 1770 material to succeed in Chem 1780. The necessary material that the students should learn/review follows:

Text: Chemistry, 10th edition, Zumdahl, Zumdahl, and DeCoste, Cengage (ISBN-13: 978-1305957404). Chapter 4 Types of Chemical Reactions and Solution Stoichiometry, Chapter 6 Thermochemistry.

### **Continuing into Chem 1780L**

Students who earned B or higher in Chem 1670 but did not take Chem 1670L should take Chem 1770L prior to taking Chem 1780L. (It is NOT recommended that students take Chem 1670L to prepare for Chem 1780L.)

Students who earned B or higher in Chem 1670 and did take Chem 1670L may take Chem 1780L (this is not perfect – but it is the best course for students who already have Chem 1670L).

### **Continuing to Chem 3310**

Students who took Chem 1670 followed by 1780 and continue to Chem 3310 should be warned that they need to learn/review some Chem 1770 material to succeed in Chem 1780. The necessary material that the students should learn/review follows:

Text: Chemistry, 10th edition, Zumdahl, Zumdahl, and DeCoste, Cengage (ISBN-13: 978-1305957404) Chapter 3 Sections 10 - 12 (limiting reactants concepts and calculations), Chapter 8 (chemical bond models and molecular shapes), Chapter 9 (molecular orbitals) and Chapter 10 Sections 1, 2, 8, & 9 (Intermolecular Forces, phase transitions), Chapter 13 (solutions: properties & energetics) Section 1 – 4.