

Chem 178: General Chemistry II
Summer Term 2023
ONLINE Asynchronous
Supplemental Webex Session: Thursdays, 10:00–10:50 am

Instructor

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Regular Office Hours* (via Webex): Tuesdays, 10:00 am–11:00 am

**Office Hours by appointment may be setup via email; each student requesting a meeting should do so at least 24 hours in advance and provide two scheduling options.*

Course Description

(3-0) Cr. 3. F.S.SS.

Prerequisites: CHEM 177, CHEM 177L, or CHEM 167

Chem 178 is the second semester of a full-year rigorous introduction to fundamental principles of chemistry. It is a continuation of Chem177. Recommended for physical or biological science majors, chemical engineering majors, and all others intending to take 300-level chemistry courses.

Learning Objectives and Outcomes

By completing this course, students will be able to:

- use the language of chemistry: symbolic representation, nomenclature, and terminology.
- represent any chemical process using a balanced chemical equation.
- recognize kinetic and thermodynamic features of chemical reactions.
- evaluate the important characteristics of chemical and physical equilibria.
- recognize acid-base and reduction-oxidation (redox) reactions.
- solve quantitative problems related to chemical kinetics, equilibria, electrochemistry, enthalpy, entropy, and free-energy
- understand nuclear structure of atoms and nuclear decay reactions.

Course Format

- Chem 178 is **asynchronous online only**. All course materials and all assessments will be presented, accessed, and/or delivered through Canvas.
- The course is composed of 7 modules: chemical kinetics, chemical equilibrium, acid/base reactions, electrochemistry, aqueous equilibrium, thermodynamics, and nuclear chemistry. Each of these modules will be covered in one week and assignments associated with each module are detailed on Canvas. Students should complete learning modules at the defined pace throughout the summer term; all modules will be made accessible at the onset of the course; however, exams will be administered at regular intervals through the summer term. We advise students to set aside regular “class hours” each week to watch video-lectures, complete assigned readings, and work through assignments. Each week’s video lectures will require a time commitment of approximately 2-3 hours / week. Additional time is required to complete assignments and readings.
- Online exams (delivered through Canvas) are due on the Monday following completion of each module. A detailed schedule of the exams is provided on Canvas.
- Assistance is just an email or a Webex conversation away. We are happy to help. Both the instructor and head TA will hold on-line student hours/Q&A sessions via Webex. **We**

encourage students to attend the help sessions arranged by the instructor and TAs!
This is one of the most effective ways to get to answers to any questions you have about the material covered in the class, and will also help your performance on assessments.

Required Technology

- A reliable Internet connection
- Access to a computer with a microphone and audio capability
- Access to Canvas
- A scientific calculator with basic functions including logarithms and exponential functions.

Required Digital Course Content (Includes E-Textbook)*

- **Title:** OWLv2 with MindTap Reader for Zumdahl/Zumdahl/DeCoste's, *Chemistry, Tenth Edition*
- **Author:** Steven S. Zumdahl; Susan A. Zumdahl; Donald J. DeCoste
- **Publisher:** Cengage
- **ISBN:** 978-1-305-95757-2
- **Price to Student:** \$47.00
- **Duration:** 180 days

* This course is enrolled in the **ISU Immediate Access Program**, which means that students will automatically receive access to all required digital course materials the first day of class. Students will be charged on their U-bill for the digital content. The billing description on your U-bill will appear as CHEM 178 IMMED ACCESS 7572. The digital content is required to complete online homework assignments and includes access to the eBook. Students who drop the course within the first 10 days of class will receive a refund on their U-bill. Students do not have to notify the bookstore if they drop the course; this is an automated process.

More details about immediate access materials can be found on the ISU bookstore page: <https://www.isubookstore.com/immediate-access>. For further questions about Immediate Access, please email immediateaccess@iastate.edu.

Access to 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. Navigate to the **E-Textbook and OWL HW System (Zumdahl Chemistry 10e OWLv2) Information Module** and select a link that reads "CHEM 178 E-book/HW."
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 ebook is included and accessed within the OWLv2 Courseware only. There is no ebook accessible through the RedShelf Course Materials tool.

Course Resources on Canvas

This course is comprised of 7 modules. In this accelerated summer course, each module is will be completed in one week. For each module, the following resources are available for you to examine, study, and review:

- **Video Lecture-Presentations:** Topic videos lasting approximately 15 minutes (some shorter; some longer). Each video used Powerpoint and begins with a brief summary of learning goals for the video, then provides some background material, and includes problem solving - both word problems and multiple-choice questions - to prepare you for assessments. You should treat these video lecture presentations as akin to in-class lectures: for best learning, actively follow presented content by **taking notes** and working through problems on your own as they are presented.
- **Video Presentation Slides:** in PDF and PPS format. You can run through each presentation on your own (at your own speed) using the PPS format slides.

Getting Started with Canvas

Be sure to have an ISU NetID. If you do not, please visit Passwords and Accounts

(<https://www.it.iastate.edu/services/accounts>)

Login to [Canvas](#) with your ISU NetID and password and look for your course for this semester.

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@ISU, Student Resources (<https://www.celt.iastate.edu/canvas-isu/>)
- Canvas Community-Online support forum for canvas users.

Basic Troubleshooting (if Canvas is not working)

- If your username/password is 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.

Assignments and Grading

A detailed outline of all graded assignments is provided on the Home page of the Canvas Course Page under the “Course Summary heading.” A detailed outline of all assignments is also provided in the “Course Schedule” document provided on the Canvas home page..

Assignment Types:

Lecture Quizzes

There is a multiple-choice quiz on Canvas associated with each lecture video presentation. These quizzes must be completed by 11:59 pm on each Friday during the course. The lecture quizzes are meant to help guide students in identifying key concepts from the video lectures. **As good practice, try to take the lecture quiz immediately after watching the lecture material using the notes you took during the lecture.** You will get two attempts to answer each question. Use this as a learning exercise: for questions that you missed, go back to the relevant sections of the lecture videos, review the presentation, and update your notes.

Homework (HW) Problems

There is a homework assignment for each module/week, i.e. 7 assignments in total. All HW assignments must be completed in the OWLv2 homework system, which can be accessed through the Canvas CHEM 178 course page. HW assignments are due by **Saturday at 11:59 p.m. of each week**. *Homework is designed to help you master a topic before moving on to the next topic; thus, you should complete each HW by the scheduled deadline.* Do not procrastinate in completion of the HW assignments; some of them will take a substantial amount of time to complete.

Module Exams and Final

Module exams are due on the Monday following completion of each module. To accommodate students' diverse schedules, module exams will be available from Sunday morning until Monday evening. Each exam is multiple-choice. Once you begin a Module Exam, you have 1 hour (60 minutes) to complete it. You must work independently. There are no make-up exams. If you have a valid, serious reason to miss an exam, you need to immediately contact the instructor. A cumulative final exam will be administered on Canvas and is due on Friday July 7th. The final exam will be open on Thursday and Friday, July 6-7. Once you begin the final exam, you have 1 hour (60 minutes) to complete it. The lowest exam grade will be dropped.

Supplemental Worksheets

A weekly supplemental worksheet will be provided to all students. The instructor will, in part, base weekly live Webex sessions (Thursdays, 10:00–10:50 am) on these weekly worksheets. The supplemental worksheets offer students an additional resource to help in mastering the course material, and offer an opportunity to earn up to 5% extra credit for the overall course grade. To get credit for the supplemental worksheet, it must be turned in by **Friday at 11:59 p.m.** *The completed worksheet must be submitted to Canvas as a PDF.* On each Saturday, an answer key for the worksheet problems will be made available for students' preparations for upcoming module exam. Students may work with a study partner, but each student must submit his/her/their own worksheet.

Grading

There will be three types of graded assessments in this course: Video-Lecture Quizzes, OWLv2 Homework Assignments, and Exams (module exams and the final). Extra credit can be earned through completion and submission of weekly supplemental worksheets. Each of these assessment types will account for a percentage of your overall grade as elaborated in the table below:

Assessment Categories	Percent Contribution
Video Lecture Quizzes	15%
OWLv2 HW Assignments	25%
Module Exams and Final	60%
Total	100%
Supplemental Worksheets	up to +5%

Grade Distribution

Grades for each assessment category are based on the percent contribution of that category to the overall course grade. The absolute number of points in each assessment category does not affect the weight of grades from that category on the final grade. However, point values within

each category do affect total score in that category. For example, longer OWL assignments are worth more than shorter assignments.

Letter Grading Scale*

Letter Grade*	% Range
A	93 – 100
A–	90 – < 93
B+	87 – < 90
B	83 – < 87
B–	80 – < 83
C+	77 – < 80
C	73 – < 77
C–	70 – < 73
D+	67 – < 70
D	63 – < 67
D–	60 – < 63
F	< 60

*+ and – (plus and minus) grade division are tentative; exact grade division thresholds will be informed by overall class performance and so will be established at the end of the semester. Final grades are based solely on graded work and are NOT negotiable; no single student will be offered make-up or extra credit points.

Course Policies

Late Assignments and Exams

- Homework assignments and lecture quizzes are designed to help you master a topic as we go along. It is very important that you complete the work by the scheduled deadlines.
- Late submissions for HW assignments are accepted on OWL with 10% penalty.
- Missing the window to take the exam will result in an automatic score of zero. If you have extraordinary circumstances that prevent you from completing the exam, please contact the instructor/head TA as soon as possible.
- Deadlines are firm, but communication is also important: if you know you will be unable to complete an assignment because of illness or another emergency, contact your instructor in advance. If the illness or other emergency happens on the day the assignment is due, you must contact the instructor ASAP and by 10:00 AM the day after the deadline.

Expected Online 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 assignments and examinations

- **You must work independently on exams.**
- **You are permitted to use the following authorized resources to complete any assessment:**
 - Scientific or graphing calculator, Excel (for calculations)
 - Paper and pens/pencils (any work on scratch paper will not be graded)
 - Your course notes, HW assignments, video quiz questions, supplemental worksheets
 - CHEM 178 Canvas course content
- **You are NOT permitted to do the following:**
 - You may NOT communicate with anyone else about the Module exams.
 - You may NOT have someone else help you solve the Module exam questions.
 - You may NOT post questions about the assessment to the Help Forum on Canvas.
 - You may NOT post and/or consult unauthorized aids, including paid-for subscriptions to Chegg, Scribd, or tutoring services.
 - You may NOT search the questions in a search engine (e.g. Google).

University Policies

Students in this course are responsible for being familiar with the University's student rules and policies. Please see the "Syllabus Statements" section of the course's Canvas site.