

CHEM 178 | General Chemistry II

Asynchronous Online. 4 credits.

Prerequisites/Corequisites:

Course prerequisites/corequisites: [MATH 140](#) or high school equivalent, and CHEM 50 or 1 year high school chemistry, and credit or enrollment in [CHEM 177L](#).

Chemistry and biochemistry majors may consider taking [CHEM 201](#).

PLEASE NOTE: Chem 178L is administered separately from this course, so questions regarding issues for the lab (e.g., attendance due to COVID-related isolation) need to go to Dr. Sara Pistoletti (the lab instructor) and your lab TA.

Instructor and Contact

Instructor: Justin Conrad. **E-mail:** jac@iastate.edu. **Phone:** email preferred.

Office: Office hours will be only virtual via Webex.

Office Hours: Justin Conrad: Monday and Thursday at 9:00 a.m. – 9:50 a.m. and by appointment. Join the Webex meeting via Canvas (click on Webex in the course navigation menu or go to Canvas Calendar).

Teaching assistant (TA): Ms. Aishwarya Mantravadi. **Office Hours:** Friday 10 a.m. – 11:00 a.m. and by appointment via Webex (Aishwarya will send an Announcements prior to each session with the link to her Webex person room).

Email contact: amantra@iastate.edu.

Contacting the Instructors/ TA: I encourage you to contact me or the TA whenever you need help with the course material or you have other questions or concerns related to the course. Response time is 24 hours.

- **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 (jac@iastate.edu) for questions/concerns that are personal in nature** (scheduling an appointment; SAAN, etc.)

Tech Support Email: elotech@iastate.edu (Engineering-LAS Online Learning (ELO) for COE and LAS only. Please enter your respective college's tech support email if you do not belong to COE or LAS). Go to [Canvas Help](#) for more information on finding help with Canvas.

Course Catalog Description

(4-0) Cr. 4. F.S.SS.

The second semester of a two-semester sequence which explores chemistry at a greater depth and with more emphasis on concepts, problems, and calculations. Recommended for physical and biological science majors, chemical engineering majors, and all others intending to take 300-level chemistry courses. Principles and quantitative relationships, stoichiometry, chemical equilibrium, acid-base chemistry, thermochemistry, rates and mechanism of reactions, changes of state, solution behavior, atomic structure, periodic relationships, chemical bonding.

Learning Outcomes

1. **By completing the course, the students will be able to interpret and explain** the connection between symbolic representations (the microscopic level) and the amounts of substance (the macroscopic level) when given a qualitative or quantitative problem involving a chemical system. To achieve this goal, students will learn about atoms, bonding, and chemical reactions.

2. **By completing the course, the students will be able to assess, describe,** and ultimately **predict** the chemical and physical properties of elements and compounds (gaseous, liquid, and solid materials). To achieve this goal, students will learn about structure, bonding, and inter-molecular interactions.
3. **By completing the course, the students will be able to recognize** the importance of energy in chemical and physical processes and will **assess** and **describe** the feasibility and energetic implications of any process under specific conditions. Students will learn about energy and thermodynamics.
4. **By completing the course, the students will be able to** make connections between topics seen within this course as well as between chemistry and other disciplines such as physics, natural sciences, engineering. Students will be able to approach chemistry not just as a collection of isolated chemistry facts, but as a systemic discipline, one in which the study of the inner systems (e.g., the molecular perspective) allows to better understand most outer systems (e.g., engineering, medicine, environment, social contexts, etc.).

Course Format

Asynchronous online.

This course is entirely delivered online. This said, Dr. Conrad has office hours on Monday 9:00 am – 9:50 am. Join via Webex (links on Canvas). Office hours are for asking questions about course policies and chemistry. Please feel free to join: I will have material to review if there are no direct questions from students. If you have questions that are personal in nature, I encourage you to email jac@iastate.edu to set up an appointment.

On Canvas, you can find a detailed schedule with the dates by which you are expected to complete the Modules and the corresponding assignments, including exams; these are all online. See below for more details.

Arranged Discussion (also known as Recitation) is a **virtual help session** lead by a teaching assistant (TA) where you can ask questions, seek assistance with homework, tests, and worksheets. Attendance is not mandatory but strongly encouraged. Find day/time and Webex link on Canvas.

Required Technology

1. A reliable Internet connection.
2. Access to Iowa State University computer system and your Learning Management System (Canvas etc.).
3. Access to a computer with a microphone and audio capability.
4. A scientific calculator with basic functions including logarithms and exponential functions.

Required Textbook and Supplies

- Chemistry, 10th Edition - by Zumdahl, Zumdahl, and DeCoste, Cengage.
- OWLv2 online homework.

Immediate Access Program

This course is enrolled in the Iowa State University Immediate Access Program. Immediate Access is a collaborative program where the University Book Store, faculty, and publisher have worked together to ensure access to Cengage Learning's "**CHEMISTRY+OWL V2**" courseware the first day of class at a reduced price compared to the national average. *The courseware is required to complete online homework assignments and includes access to the eBook.*

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 at a reduced cost compared to the national average.

What digital content is required for this course?

The following Cengage Learning OWL V2 courseware is required for your course:

Chemistry+OWL V2 (Zumdahl/Zumdahl/DeCoste) Cengage; ISBN: 9781305957572

How do I access the required digital content?

Cengage Learning's OWL courseware is required to do online homework for your course. To access OWL in your Canvas course:

1. Go to **Modules** or **Assignments** and click on any homework assignment. From there, follow the instructions to activate your account.

Important: *The FIRST TIME you want to access the digital content, you must access OWL.* Do not attempt to open the eBook unless you are registered on OWL.

2. Register for OWL using your Iowa State email. Once you register for the course you should have access to the OWL 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 OWL Courseware only. After you are registered in OWL, you may open the eBook using the link on Canvas or from OWL by clicking on "Study Tools". This eBook is NOT accessible through the RedShelf.

How is Immediate Access billed?

You will be automatically charged on your u-bill for this digital content. The billing description on your Ubill will appear as CHEM 177 IMMED ACCESS 7572. The amount charged on your Ubill 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 (5 days for courses 8 weeks or shorter). **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 (5 days for courses 8 weeks or shorter). Instructions on how to opt out will be emailed shortly before classes start. Be aware that if you drop out you will no longer be able to complete the required homework.

How do I access the required digital content?

There is a tool on the navigation menu of your Canvas course called Immediate Access Course Materials. You will receive an email shortly before classes start that will instruct you on how to access the required digital course materials. You may not be able to access the digital content until the first day of class.

Questions?

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

Library

To login from off-campus: When you're 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.

Assignments and Grading

- **Homework.** OWL will be used for homework assignments. You must purchase access to OWL to receive credit on homework; to login, follow the instructions listed above under Required Textbook and Supplies. See Schedule and go to Canvas for exact dates. ***Homework is designed to help you master a topic before we move on to the next topic; thus, you must complete the work by the scheduled deadline.*** There are no exceptions to this policy and no extensions or make-ups for OWL assignments will be granted. The settings on the homework are meant to be non-punitive, so you can get essentially all the points if you work them through with some patience. We readily acknowledge that the time you spend on the homework will probably be disproportionate to the points. The points are really there to nudge you to do them! The reward for doing the homework well will come from doing well on the exams. Note that the "Mastery" homework assignments are the graded ones. They require you to get two problems right in a row on a given topic. You have 10 attempts on each problem and you are provided with guidance and hints. There is a separate link to a large set of typical "end of chapter" homework questions for each module. These are entirely optional but are good practice for you.
- **Mini-Quizzes.** These tests should be completed immediately after reading the corresponding parts in the textbook and notes and viewing the corresponding videos. They are a fundamental part of the learning process and will help you master the topics while you study them. See Schedule and go to Canvas for exact due dates. You must complete the work by the scheduled deadline. There are no exceptions to this policy and no extensions or make-ups for Mini Quizzes will be granted. For each module, there are two 5-question Mini Quizzes, which are primarily meant as formative learning tools. You should take the first one after watching the first 2-3 videos and then the second at the end. The settings on these quizzes will include having two chances for each question, so it is expected that most students will score very well on these. You can look up the answers you might have missed in between your two chances.
- **Worksheets.** In addition to online homework assignments, two worksheets are due on each Sunday of the semester by 6:00 p.m. The completed worksheet must be submitted to Canvas as a PDF. The worksheet will be made available each week on Monday and can be accessed within the particular learning module on Canvas. After 6:00 p.m. on each Sunday, an answer key for the worksheet problems will be made available for students' preparations for upcoming module exams. Students may work with a study partner, but each student must submit his/her/their own worksheets. Any questions that you have about worksheets are also excellent questions to ask during instructor or TA help sessions, and you are encouraged to do so. The lowest two scores of the worksheets are dropped.
- **Exams.** There will be 7 one hour module exams on Mondays. Additionally, a comprehensive, final exam will be on Friday, July 8. Each exam will be online on Canvas. The module exams will be open for 24 hours on the designated day. Once you open the test, you will have 60 minutes to complete it. There are no make-up exams. If you have a valid, serious reason to miss an exam, you need to immediately contact the instructor. You will be asked to drop the course if you miss

more than one exam. Information specific to each exam will be communicated via email and on Canvas. The lowest module exam score will be dropped.

Ground rules for the exams

You must work independently.

You are permitted use the following authorized resources to complete the exams:

- Scientific or graphing calculator, Excel (for calculations.)
- Paper and pens/pencils (any work on scratch paper will not be graded.)
- Your course notes, homework assignments, PRQ's.
- CHEM 178 Canvas course content and any links to external webpages that are provided therein.

You are NOT permitted to do the following:

- You may NOT communicate with anyone else about the exam.
- You may NOT have someone else help you solve the questions.
- You may NOT post questions about the exam 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).

We actively monitor external sites for illicit behavior.

Exam Structure and Keys

- The tests are randomized and set up to give slightly different questions to each student. Either the question will vary slightly or the choices will vary slightly, but the questions are meant to be identical in concepts and difficulty. Questions are either multiple choice or exact answer (type a numeric value or word answer).
- Unfortunately, you will not be able to freely look at your tests after they are taken.
- You are welcome to schedule an appointment with your instructor any time to see your exact test and responses and go over the answers.

Reporting Errors

Despite our best efforts, occasionally mistakes survive our editing process. If you believe there is an error in your Canvas grade or in an assigned quiz/test, or answer, please send an email to your instructor. It is a prerogative of the student to confirm the accuracy of their grades and to report errors encountered within 7 days after the grades for homework, mini quizzes, and exams are posted.

Students also occasionally run into problems with browsers, service interruptions, or other related matters that may require technical assistance during exams or at homework deadlines. If you have a problem of this sort, contact your instructor immediately.

Grade Distribution

Assessments	Percentage
Homework Assignments (OWL)	20%
Mini Quizzes	10%
Worksheets	20%
Exams	40%
Final Exam	10%
Total	100%

Grading Scale

Letter Grade	Range	Letter Grade	Range
A	93.00-100	A-	90.00-92.99
B+	87.00-89.99	B	83.00-86.99
B-	80.00-82.99	C+	77.00-79.99
C	73.00-76.99	C-	70.00-72.99
D+	67.00-69.99	D	63.00-66.99
D-	60.00-62.99	F	59.99 and below

Course Policies

Late assignments

Homework, Worksheets and Mini Quizzes are designed to help you master a topic before we move on to the next topic; thus, you must complete the work by the scheduled deadline.

Missing the deadline to submit the Homework and the Mini Quizzes will result in a score of zero on these assignments. Missing the window to take the exam will result in an automatic score of zero. This said, please contact your instructor should you have extraordinary circumstances that prevent you from completing the assignment by the deadline. You must contact us as soon as possible, see next section.

Deadline extensions

Deadlines are firm. Communication is 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.

Cheating and plagiarism

Please review the information under Academic Misconduct

Expected online or classroom 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 may disagree with other students, but such disagreements need to be based upon facts and documentation. It is my goal to promote an atmosphere of mutual respect in our interactions. Please contact me if you have suggestions for improving the interactions in this course.
- Professional and respectful tone and civility are used in communicating with fellow learners and the instructor, whether the communication is by electronic means or by phone or face-to-face.
- Video interactions reflect a respectful tone in verbal communications and body language.
- Use correct spelling and grammar.

Ground rules for the exams

You must work independently.

You are permitted use the following authorized resources to complete the exams:

- Scientific or graphing calculator, Excel (for calculations.)
- Paper and pens/pencils (any work on scratch paper will not be graded.)
- Your course notes, homework assignments, PRQ's.

- CHEM 177 Canvas course content and any links to external webpages that are provided therein.

You are NOT permitted to do the following:

- You may NOT communicate with anyone else about the exam.
- You may NOT have someone else help you solve the questions.
- You may NOT post questions about the exam 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).

Ground rules for homework (HW) assignments, Worksheets and Mini Quizzes

[Exams have stricter rules, see the corresponding part above]

You are permitted use the following authorized resources to complete HW and PRQ:

- Scientific or graphing calculator, Excel (for calculations.)
- Paper and pens/pencils (any work on scratch paper will not be graded.)
- Your course notes, homework assignments, Mini Quizzes.
- CHEM 178 Canvas course content and any links to external webpages that are provided therein.
- You may post questions about HW and PRQs on the Help Forum and/or ask your TA; you will not receive a direct answer (e.g. the solution to the problem) but you will be advised on how to proceed in the solution.

You are NOT permitted to do the following:

- You may NOT have someone else solve the questions for you.
- 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).

Scores

Mini quizzes and exams are automatically graded directly on Canvas; OWL (homework) is automatically graded on the OWL site. Homework scores are synced into Canvas periodically. Errors may occur: OWL may experience a glitch and not import the correct score; on an exam or Mini Quiz, the correct answer may be incorrect; a grader may make a grading mistake. If you believe that an error occurred, you must inform the instructor immediately, and by one week (7 days) after the assignment due date. It is the student's responsibility to check 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.**

[Visit ISU Catalog website for the grading policies regarding incomplete marks](#)

ISU Academic Calendar

List important dates (or include a link to the ISU Academic Calendar) such as last drop date, registration dates for the next semester. Visit the ISU Academic Calendar for detailed information

Additional Learner-Centered Information

- **Take time to familiarize yourself** with the course structure and layout in the learning management system being used such as Canvas or other technology used in the course.
- **Read** the essential documents – course syllabus/course schedule.
- **Identify and establish** the **communication channels** provided – Help Forums/online meetings/Email/groups discussion forums

- **Confirm technical requirements** –so that you can access all the materials
- Be patient and **respectful of response time** mentioned.
- **Plan your time** – have a personal schedule, a consistent study time and stay organized. **DO NOT WAIT UNTIL THE LAST MOMENT TO WORK ON YOUR ASSIGNMENTS.**
- **Make connections** with fellow classmates and the instructor.
- **Ask Questions** – Don't wait. Ask questions regarding expectations/content/policies. Follow the mentioned protocols for the course.
- Become familiar with [the way the To Do list works in Canvas](#) to help you stay organized.
- **Log-in to the course at least 3 times** in a day.

Academic Misconduct

All acts of dishonesty in any work 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, F grade for the course, and could 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; 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 answers to exam question during the 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.

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

Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact your instructor to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with your instructor, you will need to obtain a SAN form with recommendations for accommodations from the [Student Accessibility Services](#) located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email accessibility@iastate.edu. Retroactive requests for accommodations will not be honored.

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.

Prep Week

This class follows the Iowa State University Prep Week policy as noted in section 10.6.4 of the [Faculty Handbook](#).

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.

Accessibility Statement

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, 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.

Freedom of Speech Statement

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.

Canvas for Students at ISU

Getting Started

1. Be sure to have an ISU NetID. If you do not, please visit Passwords and Accounts (<https://www.it.iastate.edu/services/accounts>)
2. 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 Guides-a repository of how-to's](#)
- [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 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.
- Check general [Technology Support for Students](#)