

Instructors:

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Course Coordinator:

Leah Everly, leverly@purdue.edu
BRWN 1144F, 494-5225

Supervising TAs:

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Teaching Assistants:

Approximately 25 teaching assistants who teach lab and recitation sections

General Chemistry Office, BRWN 1144, genchem@purdue.edu

Marlene Miller, Administrative Assistant, marlenem@purdue.edu
Melissa Roadruck, Administrative Assistant, 765-494-5252, melissa@purdue.edu

CHM 115 Classroom Components

Lectures: In-person (WTHR 200) and recorded via Boilercast. Lecture meets two times per week, according to your class schedule. **CRNs:** 13892, 13893, 15897

Labs: In-person, Chaney-Hale Hall of Science (CHAS)
Labs meet Monday and Tuesday for 2 hours, 50 minutes according to your class schedule.

Recitation: In-person
Recitations meet Thursday, Friday, and Monday for 50 minutes, according to your class schedule.

Course Description

Chemistry 11500 is the foundational general chemistry course for engineering, science, and some agricultural majors. The stated minimum prerequisite for CHM 11500 is one year of algebra and one year of chemistry.

At the beginning of the course, you will have a chance to review your high school chemistry using several resources. Topics covered during the semester will include thermochemistry, nuclear chemistry, quantum theory and atomic structure, periodic trends, models in bonding, shapes of molecules, intermolecular forces, organic chemistry, synthetic and biological polymers, infrared spectroscopy, and liquids, solids and phase changes. Detailed learning objectives for each unit will be posted on the course Brightspace page.

Learning Outcomes

By the end of the course, you will be able to:

1. Use theory to understand/predict experimental observations.
2. Demonstrate and understanding of the physical properties and molecular understanding of chemical reactivity and materials.
3. Document scientific information and experimental data and write scientific reports, with graphical presentation of data.

The course has been designed and structured so that in addition to the treatment of the concepts and topics listed above, there is a simultaneous emphasis on development of problem-solving skills. Laboratories are scheduled weekly and offer an opportunity to reinforce and extend what is discussed in lecture, explore new topics, and to develop your knowledge of chemistry laboratory skills.

The Chemistry 11500 team—the professors, course coordinator, teaching assistants, administrative assistants, and preparations lab staff—are committed and focused on helping you learn chemistry. We know that this is a foundational course for your major and in order to achieve your goals and dreams you need to do well in the course! Please read on to learn about the required materials, lecture and recitation schedule, recommended ways to study, lab policies, grading, and other course policies and procedures.

Foundational Core: CHM 11500 meets the science requirement of the university's foundational core.

Course Information

Brightspace: <https://purdue.brightspace.com/d2l/login> is the primary course management site for the course. Assignments, checklists, links to lectures and labs, announcements, learning objectives, grades, and other course information will be posted on Brightspace. Be sure to check Brightspace frequently and sign up for notifications.

Weekly Assignments

During ***most*** weeks, you will have the following assignments:

| Item | Platform | Day | Time |
|---------------|----------|--------------------|-----------------|
| Prelab Quiz | Labflow | Sundays | Due by 11:59 PM |
| Lab Procedure | Labflow | Sundays | Due by 11:59 PM |
| Lab Data | Labflow | End of Lab Period | |
| Lab Report | Labflow | Day your lab meets | Due by 11:59 PM |
| Homework | Achieve | Thursdays | Due by 11:59 PM |

All assignments will be listed on the course Brightspace page. Refer to details in the relevant sections that follow.

Required Materials

Textbook: The textbook used in CHM 11500 is *Chemistry: The Molecular Nature of Matter and Change*, 10th edition, by Silberberg and Amateis. There are several options available for purchasing a paper and/or electronic version of the book, including purchasing a loose-leaf version with eBook directly from McGraw-Hill. See Brightspace for further information.

Achieve: In CHM 11500, you are required to complete homework online using the Macmillan Achieve program. You can purchase instant access via the link on Brightspace or you can purchase a code from a local bookstore that you can then redeem via the link on Brightspace.

Office 365 You can download Microsoft office products for free. Go to <https://www.itap.purdue.edu/shopping/software/product/office365.html> and log in using your Purdue account.

Labflow: You are required to purchase the Labflow program to access the lab manual and to submit prelab quizzes and lab reports. See the links and instructions on Brightspace for details.

Lab materials: In addition to Labflow access, you are also required to have indirectly vented chemical splash goggles that must be worn while in the laboratory. Goggles may be purchased in CHAS, in bookstores, or online. Goggles may not have exposed holes on the sides, top or bottom that would allow chemicals or vapors to damage the eyes (must meet the ANSI Z87.1:2020 (+D3) standard).

Calculator: You may only use a simple, scientific calculator on exams. Calculators that can graph or solve or store equations are **NOT** allowed. See Brightspace (Required materials) for details.

UNIVERSITY AND COURSE POLICIES

Details of the following policies are listed under the *University Policies and Statements* module on the CHM 11500 Brightspace page: Academic Integrity, Nondiscrimination, Class Absences, Attendance, Amorous Relationships, Emergency Preparedness, Violent Behavior, Use of Copyrighted Materials, and Land Acknowledgement.

Adding/ Dropping/Changing Sections

CHEMISTRY DEPARTMENT DEADLINES FOR ADDING OR SWITCHING SECTIONS

Fri. Jan 12: last day to add CHM 11500 or switch lab sections *without* instructor approval

Fri. Jan. 26: last day to switch lab sections *with* instructor approval*; last day to add CHM 11500 with instructor approval*

Fri. Feb. 2: last day to switch from another CHM course to CHM 11500 *with* instructor approval*

UNIVERSITY DROP DEADLINES

Mon January 22: Last day to drop (cancel) a course via myPurdue without it appearing on your record.

Fri April 12: Last day to drop (cancel) a course

**Submit request using Scheduling Assistant*

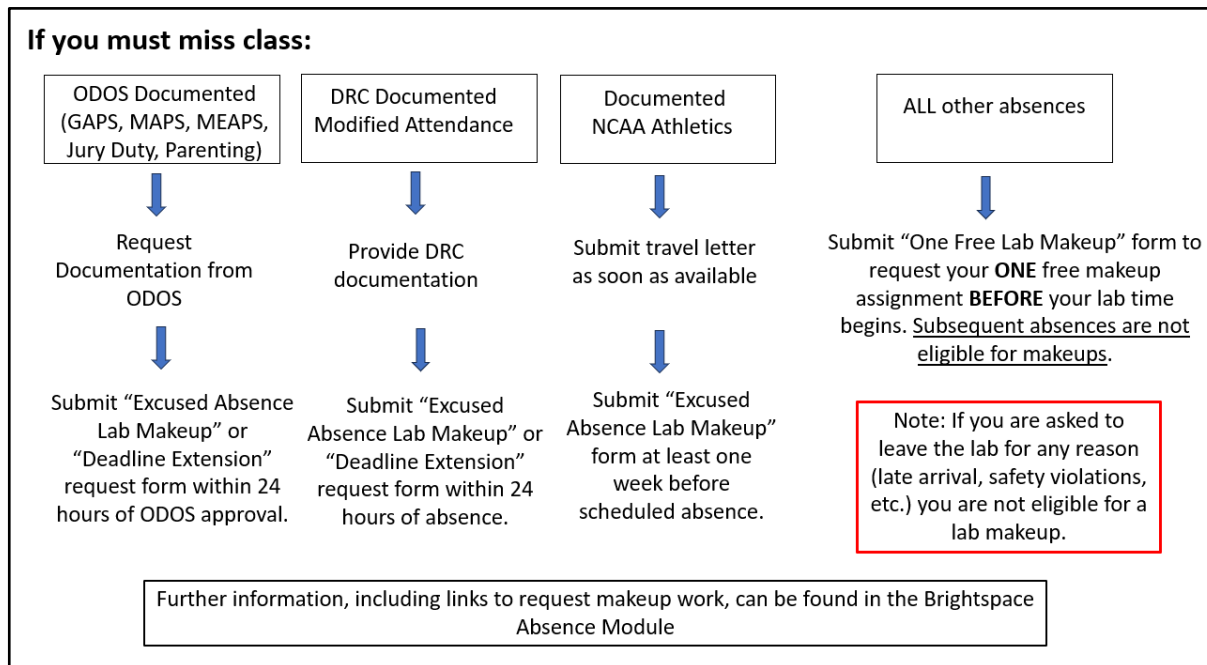
Leaving the Course: If you drop your laboratory course after having checked into a lab drawer, it is YOUR responsibility to check out of your assigned drawer during your scheduled lab period. You are encouraged to check out as soon as possible rather than waiting until the end of the semester.

Failure to check out of lab will result in \$45 fee, and forfeiture of the right to determine the acceptability of all drawer equipment.

Late Registration If you register late, notify Mrs. Leah Everly within 24 hours of registration to see about the possibility of making up missed assignments.

Attendance and Absences

This course follows Purdue's academic regulations regarding attendance. Only the course instructors (professors) can excuse a student from a course requirement or responsibility. **If you are absent, refer to the Absence module on Brightspace and take the relevant action step. It is the responsibility of the student to understand the absence policies and the steps to take should they need to miss class for any reason.**



Under academic regulations, excused absences may be granted by ODOS for cases of grief/bereavement, military service, jury duty, parenting leave, or emergent/urgent medical care (details below). These are the **only** excused absences in CHM 11500. To request makeup work or deadline extensions for excused absences, see the Absences module on Brightspace.

To account for unexcused absences (illnesses, trips, conflicts, or other situations), the lowest score in each grade category (recitation, lab report, prelab quiz, HW, exam) is automatically dropped at the end of the semester. This includes internet or related technology issues that may have prevented you from completing a lab report, prelab quiz, or homework. Students with unexcused absences are also eligible for one lab make-up assignment, per student, per semester. Refer to the Brightspace Absence Module and the Laboratory section of this document for details. No other makeup work or deadline extensions (i.e. for prelab, recitation, HW, or exams) are possible for unexcused absences.

Absence accommodations approved by the **Disability Resource Center** will be handled individually. Contact Leah Everly (leverly@purdue.edu) for more information.

Grief Absence Policy for Students (GAPS)

If you experience the death of a family member or close friend, fill out the form at <https://www.purdue.edu/advocacy/students/absences.html>. Refer to the Absence module on Brightspace for more information.

Military Absence Policy for Students (MAPS)

If you are required to complete mandatory military training, fill out the form at <https://www.purdue.edu/advocacy/students/absences.html>. Refer to the Absence module on Brightspace for more information.

Medical Excused Absence Policy for Students (MEAPS)

Students may occasionally have to miss class and other academic obligations due to hospitalization, emergency department or urgent care visits, whether physical or mental health related in nature. The intention of this policy is to afford arrangements to students experiencing serious and short-term medical situations which cause them to miss coursework and/or exams. A student should complete the Medical Excused Absence Request Form (<https://www.purdue.edu/advocacy/students/absences.html>) to request that an absence notification be sent to instructors. You will be given the opportunity to make up work missed due to a medical excused absence. Refer to the Absence module on Brightspace for more information on requesting makeup work or deadline extensions.

Mental Health

Purdue University is committed to advancing the mental health and well-being of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should contact Counseling and Psychological Services (CAPS) at 765-494-6995 and <http://www.purdue.edu/caps/> during and after hours, on weekends and holidays, or by going to the CAPS office of the second floor of the Purdue University Student Health Center (PUSH) during business hours.

If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack, <https://purdue.welltrack.com/>. Sign in and find information and tools at your fingertips, available to you at any time.

If you need support and information about options and resources, please see the Office of the Dean of Students, <http://www.purdue.edu/odos>, for walk-in hours (M - F, 8 am - 5 pm).

If you find yourself struggling to find a healthy balance between academics, social life, stress, etc. sign up for free one-on-one virtual or in-person sessions with a [Purdue Wellness Coach at RecWell](#). Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is completely free and can be done on BoilerConnect. If you have any questions, please contact Purdue Wellness at evans240@purdue.edu.

Basic Needs Security

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday. Considering the significant disruptions caused by the current global crisis as it related to COVID-19, students may submit requests for emergency assistance from the Critical Needs Fund (<https://www.purdue.edu/odos/resources/critical-need-fund.html>).

Diversity Statement

We believe every student in this course has something of value to contribute. Please take care to respect the different experiences, beliefs and values expressed by students and staff involved in this course. We support Purdue's commitment to diversity, and welcome individuals of all ages, backgrounds, citizenships, countries of origin, disabilities, education, ethnicities, family status, genders, military experiences, political views, races, religions, sexual orientations, socioeconomic status, and work experiences. See: <http://www.purdue.edu/diversity-inclusion/>

Disability Accommodations

If you require accommodations to access course activities or materials, the accommodations must be described and approved by the Disability Resource Center, Young Hall Room 830, 302 Wood Street, 765-494-1247, www.purdue.edu/drc. **To implement accommodations, you must submit your “Course Accessibility Letter” to all sections (CRNS) of the course in which you are enrolled (lecture, lab, and recitation) via the AIM system at least one week before an exam or assessment for which accommodations are desired.** Additional instructions may be provided by the Disability Resource Center which must be followed as well. We may also require an in-person or virtual meeting to discuss certain accommodations.

Due to the size of the class, students with testing accommodations are expected to schedule and take their examinations through Purdue Testing Services. Students are expected to respond in a timely manner and meet all communicated deadlines to schedule their examinations (including the final) with the testing center. Students with accommodations who fail to respond and fail to schedule their test with the testing center may not be able to have all their accommodations met. Thus, it is critically important that all students read their Purdue email daily and respond in a timely manner to requests or directives, especially if you have accommodations related to testing.

Implementation of accommodations may not be possible if insufficient notification is given.

Emergencies

In the event of a major campus emergency, course requirements, deadlines, and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s control. Relevant changes to CHM 11500 will be posted on Brightspace and shared via announcements and email.

You are expected to read your Purdue email on a frequent basis.

Academic Integrity

All students are expected to be familiar with Purdue’s policies on academic integrity explained in the “University Policies and Statements” Module on Brightspace, or via this link: <https://www.purdue.edu/odos/academic-integrity/>.

In CHM 11500, academic integrity means “doing your own work” at all times. Discussion of chemical concepts is encouraged but sharing your answers and work in person or on social media for the express purpose of letting other students copy it is not acceptable, nor is obtaining answers derived by others through these outlets. Using online resources such as Chegg to gain answers to any graded assignment is not allowed. Such a use of technology does not help you learn the material and is considered academic dishonesty.

Working together is allowed on lab reports; however, your answers must be *in your own words*. All reports will be analyzed with Turnitin (a plagiarism checker), and students with closely matching reports will be investigated. In lab reports, you must cite any sources (including the lab manual) used for your answers. Copying text word-for-word from the lab manual/instructions is prohibited and will

receive no credit. Using Chatpgt to generate answers is not allowed and violates academic integrity policies.

All collaboration with others (such as Group Me, Zoom, discussion boards, text, in-person, TA office hours, etc.) during prelab quizzes is prohibited.

Consequences of academic dishonesty include receiving a lower or failing grade for an assignment, being required to repeat the assignment, receiving a lower or failing grade for the course and/or dismissal from the University. All incidents of academic integrity are referred to the Office of the Dean of Students. A student accused of academic dishonesty will be afforded due process as defined by Purdue University procedures.

This course packet is a contract between CHM 11500 students and instructors. If a student violates the contract by committing an act of academic dishonesty, the instructor reserves the right to alter the terms of the contract (including grading policies) at his/her discretion.

Purdue's Honor Pledge: *"As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - we are Purdue."*

<https://www.purdue.edu/provost/teachinglearning/honor-pledge.html>

Overview of CHM 11500 Activities and Policies

How to Study for CHM 11500

It will take you at least two hours on your own for every hour we spend in class in order to study and learn the material. This means you will spend about 8-12 hours of distraction-free studying and working with chemistry each week. You may spend this time reviewing and annotating your lecture notes, reading the text, doing homework, working practice problems, studying for quizzes, or other things. You may find yourself spending *more than* 8-12 hours per week if your math skills need improvement or if it has been a few years since you took a chemistry course. If you are committed to your goals and dreams, then dedicate yourself to spending the necessary time to perform well.

Before Lecture

- Review your notes from the previous class.
- Review the assigned reading and read the sample problems within the assigned section of the textbook.

Use the textbook in ways that work best for you.

- Use the textbook as a reference when you study your lecture notes. Fill in any gaps and correct any information.
- Processing technical information will be more effective in the absence of social media, TVs, radios, headphones, etc. Turn your phone on silent and set it aside.
- With technical material, the subheadings often carry important information. This is different from the chapter headings in a novel that usually contain no information.
- Read technical material (like your Chemistry textbook) differently than you would read a novel. Read in short "chunks" and give yourself time to reflect and interpret the information presented. With technical material, it is often difficult to pick up the "story" in the second paragraph if you did not process the first paragraph.
- Try the problems in the book *without* looking at the solutions! If you have understood what you

have read, then you should be able to do the problems. First, cover the solution and try the problem. Second, quickly look at the answer to see if you are correct. If your answer is incorrect, try re-reading the section to see if you missed anything. Third, look at your work again to find your mistake. Fourth, look at the solution of the problem presented in the book. **The key is to force yourself to recall and apply material.**

During Lecture

- Take notes!
- Write down each step of every problem or example even if you do not understand the step. You can always ask about it later.
- Try to answer all the questions and work all the problems that the professor presents.
- Write a question mark next to things you do not understand so you can return to them after class.
- Use shorthand or abbreviations so that you can write quickly, but understandably.
- Periodically note the time in the margin so that you can quickly find a certain section of the lecture when you review the lecture recording.
- Turn off distractions (i.e. Netflix, other HW, social media, etc.).

After Lecture

- Review your notes while things are still fresh in your mind.
- Listen to the lecture recording to fill in things you missed.
- Attend graduate instructor (TA) office hours to ask questions and get help.
- Never miss lecture. Chemistry is cumulative. What is presented tomorrow depends upon your knowledge of what was covered today. If you will miss class, then get a friend to take notes for you or get the notes from the recording.

When Should I do the Homework?

- Do some work in chemistry every day. Work *at least* two chemistry problems each day. If you are drawing a blank about the problem after 5-10 minutes, go on to another a problem. After a day or so, work related problems in the textbook.
- Review your class notes and the assigned pages in the textbook *before* you attempt any of your homework problems.
- Seek help from a TA during recitation or office hours.

Practice, Practice, Practice

- Work additional problems at the end of each chapter that were not assigned as homework.
- Look for similarities and differences in problems (homework questions, lecture examples). Classify problems by the type of knowledge that is needed to solve the problem.

Sources of Help

There are several free sources of help for CHM 11500 students. See the Resources section on the course Brightspace page for details. Instructors and TAs will hold office hours each week. You may attend the office hours of any TA in this course. Detailed schedules of instructor and TA office hours will be posted on Brightspace.

Supplemental Instruction (SI, www.purdue.edu/SI) is offered for CHM 11500. Please visit Brightspace to

access information about connecting with SI sessions for your course(s).

Review Packet

Chapters 1-5 will be covered very briefly during the first three lectures, so it is important that you review on your own. A review packet of the topics that you are expected to remember from high school chemistry will be posted on Brightspace. Your teaching assistant will be available to answer your questions about these problems and you will also have time in recitation to work on them with your classmates.

Reading Assignments and Learning Objectives

- Reading assignments will be provided in lecture and on Brightspace. Reviewing the assigned material prior to lecture and laboratory is recommended. Some of the material will be covered in lecture and some on your own.
- Learning Objectives (posted on Brightspace) list the concepts you are expected to understand and the skills (calculations) you are expected to demonstrate for each topic covered in the course. Exam questions will be based on the Learning Objectives.

Lectures

- Lecture attendance is essential to learning the material presented.
- If slides are used, then student versions of lecture slides may be posted on Brightspace. These are outlines of the lectures and are not a substitute for taking notes in lecture.
- Recordings and screen capture of lectures may be viewed or downloaded using the Boilercast link on Brightspace.
- Cell phones, computers, tablets, or other electronic devices *not being used for instruction purposes* are distracting for everyone in a learning situation. Computers can be used to take notes and follow lecture, but please respect your classmates by not using Facebook, texting, surfing the internet, watching Netflix, etc. during class.
- Talking aloud to classmates during lecture is distracting to other students and is disrespectful to the lecturer. If you have a question please ask, but otherwise remain quiet and allow the students around you the opportunity to pay attention.
- If you have questions, please take them to your recitation and/or office hours.

Recitation

- Weekly recitation provides the opportunity for you to ask questions and work problems with your fellow students and TA. Your questions are always the first agenda item, so come prepared.
- Recitation sessions (50 minutes) are held according to your class schedule.
- Recitations will be held in-person. Attendance at recitation is required. However, do not come to recitation if you are sick, have COVID-19 symptoms, or are directed to isolate or quarantine.
- Recitation participation is worth 2 points per week. The maximum number of points you can earn for recitation attendance is 20 (i.e. participation in 10 recitations). At least two recitation participation scores will be dropped at the end of the semester, i.e. you can miss at least two recitations without penalty to your grade.
- Take your textbook, lab materials, homework, calculators, and/or any questions you have regarding

the course to recitation.

- Note that it is not your TA's responsibility to provide you with answers to homework, pre-lab, or lab report questions. Rather, they are expected to guide you to the correct solutions, help you identify mistakes, and add details to help you further understand concepts.

Homework (Achieve)

- Each week you will have one homework assignment, usually due on Thursdays at 11:59 PM. All links and due dates are in the Homework module on Brightspace.
- You will have five attempts for each Achieve question in an assignment. There is no penalty for failed attempts.
- Each homework assignment is worth 10 points. The one lowest homework score will be dropped at the end of the semester.
- Other than specific situations involving excused absences, deadline extensions are NOT possible for any homework assignments. Allow plenty of time to do your homework and get the highest possible score. If you wait until the last minute, you risk the possibility of technical difficulties, illness, or other situations interfering with your success.
- For details on requesting deadline extensions for *excused* absences, see the **Absences** module on Brightspace. The lowest homework score is dropped at the end of the semester to account for *unexcused* absences due to illnesses, technical difficulties, and other situations.
- Exams are likely to include questions taken from homework assignments.
- For help with technical issues, contact Macmillan customer service at 1-800-936-6899 or use the online form at <https://macmillan.force.com/macmillanlearning/s/contactsupport>. Chrome is the recommended browser for Achieve.

Laboratory

Laboratory projects are an integral part of CHM 11500 and are an opportunity for you to experience the chemical concepts discussed in lecture in a practical way. You will access digital lab materials (procedures, report forms, etc.) and take prelab quizzes via Labflow.

Laboratory Attendance and Participation

Lab attendance is required since CHM 11500 is a laboratory course. Replacement assignments (online makeup labs) are possible for absences documented through the Disability Resource Center or The Office of the Dean of Students (GAPs, MAPS, MEAPS, Jury Duty). To account for absences due to circumstances NOT documented through DRC or ODOS, all students will be given the opportunity to apply for one makeup assignment (See Absences Module in Brightspace for details). The one lowest lab score is dropped at the end of the semester to account for *all other* absences as well as for reports that are not submitted due to technical or other issues.

You must complete 9 of the 11 labs to maintain your grade in CHM 115. Labs are completed by either attending lab and submitting a lab report, or by submitting an approved makeup lab following an absence. Failure to complete three labs (Completing 8 labs) will result in your final grade for the semester being reduced by one full letter grade. Failure to complete 4 or more labs (completing 7 or fewer labs) will result in a final grade of F for the course.

The cases below result in a score of zero and constitute a **Failure to Complete**.

- being absent from lab other than situations addressed in the paragraph above
- being dismissed from lab for an incomplete Safety Certification (score <20/25)
- being dismissed from lab for safety violations, including dress and goggle violations
- arriving more than 10 minutes late
- leaving lab early or otherwise not completing the lab project
- inadequate preparation that hinders lab participation
- not contributing constructively to the group's work in lab
- not recording appropriate data and/or observations during lab
- failure to submit a lab report, even if you attended the lab

Lab Safety

*Students' safety in the laboratory is a priority and everyone is required to comply with the following safety regulations. Failure to comply will result in being sent home from lab **with a score of zero**, which counts as a lab absence.*

- All students will complete the online safety certification during lab check-in in Week 1. You must score at least 20/25.
- If you miss lab check-in, or score less than 20/25, then you must complete the safety certification before you will be allowed to work in lab. You will be sent home and will receive a zero for *each* lab you miss due to an incomplete safety certification.
- Dress appropriately (see image below).
- Goggles are required **at all times** in the laboratory, including during clean up and lab checkout.
- If you are in lab and your goggles are not covering your eyes, you will be sent home and will receive a zero for the lab and the lab report.
- Wear gloves when specified in the lab instructions or by your instructor.
- If your hair is longer than shoulder length, you must tie it behind your head.
- Contact lens wearers are encouraged to wear glasses in the laboratory.
- Food and beverages are not allowed in the labs. **(This includes water bottles.)**
- Follow your instructor's guidance on appropriate handling of hazardous materials and disposal of chemical waste.
- Promptly clean up spills and tidy the laboratory before leaving.
- Proper dress (clothing and shoes) is required. Your clothing must **cover you from your neck (collarbone) to your ankles** when sitting, standing or reaching. Your feet must be completely covered by your shoes (see image below).

If you attend lab in unacceptable attire, you will be sent home and will receive a zero for the lab (failure to complete).

Unacceptable clothing includes, *but is not limited to:*

- tops that are sleeveless, low-cut or V-neck (below the collar bone), bare midriff or tank-style
- loose-knit sweaters that expose your skin
- pants that are ripped or have **holes** in the fabric of *any* size
- tights or thin **leggings**
- Capri or cropped pants
- skinny or ankle pants that reveal skin between the shoe and the bottom of the pant leg
- shorts
- short skirts (i.e. shorter than floor length)
- open-toed and/or open-heeled shoes (including Crocs, Birkenstocks or other clogs)
- sandals (with *or* without socks)
- boat shoes, ballet flats, slippers, moccasins, or any shoe that doesn't cover the **entire** top of your foot and ankle, with **or** without socks

▶ **If you come to lab wearing anything in the list above, you will be sent home and you will get a zero for that lab (failure to complete).**

▶ Your best option for chemistry lab attire is a crew neck t-shirt, jeans without holes, and sneakers with socks.

PURDUE UNIVERSITY DEPARTMENT OF CHEMISTRY

Proper Lab Attire



Pre-Lab Quizzes

- The purpose of the pre-lab quizzes on Labflow is to ensure that you have adequately prepared for the lab by reviewing the concepts and procedure.
- Prelab quiz details will be posted on Brightspace in the **Labs** module.
- For the best chance of success, take the pre-lab quiz *after* reading the lab materials on Labflow.
- Prelab quizzes are *individual* assignments. Collaboration with other students or assistance from TAs *during the quiz* is not allowed. (However, you are allowed to access the lab materials.)
- Pre-lab quizzes are due each week in which lab meets on Sundays by 11:59 PM.
- If you do not attempt the quiz before the deadline, you will receive a zero for the quiz (out of 5 points). However, you **ARE** allowed to attend the lab and can still earn points for the lab report (20 points).
- There are no make-up quizzes or time extensions except for excused absences or approved accommodations—see the Brightspace Absences module for details. The lowest prelab quiz score is dropped at the end of the semester to account for illnesses, technical difficulties, and other absences that are not excused.

Lab Notes and Reports

- For each lab, you must upload a brief procedure to Labflow. Your procedure can be a list of steps, a flowchart, or an outline. Your procedure is meant to show that you read and understand what you will be doing in lab.
- Students are expected to remain in lab for the entire lab period or until individual lab reports are completed and submitted. Data will be submitted at the end of the lab period.
- For each lab project, you will complete an individual lab report in Labflow that includes calculations and discussion questions. Detailed instructions will be provided later. All submissions will be analyzed by the Turnitin plagiarism checker.
- You are encouraged to access lab materials and notes while completing the reports. Also, you may discuss your report with peers and your TA, however *you must do your own work* (i.e., you should not copy or submit another student's answers).
- Complete the lab report appropriately:
 - Answer in full sentences for open-ended questions.
 - **For calculations or lab notes, make sure your handwriting is clear and legible if you are using a stylus on a tablet or uploading photos of your handwriting.**
 - Each student must prepare individual graphs and tables, not screenshot or photograph other students' work. Label graphs and tables clearly.
 - Show calculation steps clearly for mathematical questions.
 - Show the use of correct units of measurement and significant figures.
 - Ensure results and conclusions are consistent with your data and observations.
 - Answer questions using your own words, i.e., the language is distinct.
 - Cite the lab manual if you are quoting directly from it or put information from the lab manual into your own words.
- Lab reports are due at 11:59 PM on the day your lab meets. Check all your work carefully before the deadline to make sure you answered all of the questions.

Lab Grades

- Graded lab reports will be available for viewing approximately one week after submission. You are encouraged to review the graded work as your TA may have left useful feedback for your future improvement. If you have questions about a lab grade, speak with your TA within one week of the graded report being made available to you.

Lab Equipment

You will share an assigned laboratory drawer of equipment with the student(s) at your table. Your lab partner(s) will depend upon your commitment to keeping the equipment clean and in good working condition.

- You and your lab partner(s) will have the opportunity to assess the equipment during check-in day. Any equipment that is un-usable i.e. dirty, chipped, cracked, stained, broken, etc., is replaced free during check-in.
- After check-in day:
- It is important that you do your part to maintain the drawer throughout the semester by cleaning all the glassware after use by washing with hot water, soap, and a brush, rinse with tap water, then rinse with deionized water. By using this 3-step process for cleaning glassware, you will have better experimental results.
- If you are responsible for a piece of equipment becoming un-usable i.e. the piece becomes chipped, cracked, stained, broken, etc., you must go to the storeroom (immediately) and purchase a replacement.
- Should you discover that a piece of equipment is missing, first check with the other students at your table and in the lost and found box in the lab. If the piece is still missing, your group must replace it immediately. The storeroom staff can split the cost of a replacement among all or any number of lab partners.
- Often pieces of equipment are broken accidentally; for instance, a thermometer rolls off the bench and breaks. Replacing the thermometer is still the responsibility of the group; the storeroom staff can split the cost of a replacement among the lab partners.

Checkout day:

- On the last day of laboratory, you and your lab partners will checkout of your lab drawer. **Lab checkout is mandatory.** You must arrive on time, be properly dressed, and wear goggles. If you do not attend checkout, if you arrive more than 15 minutes late, or if you are asked to leave for safety violations, you will be assessed a \$45 Failure to Check Out fee in addition to your portion of the cost of any replacement equipment needed by your group.
- If you drop CHM 115 any time after February 4, 2024, you will also be required to complete a formal lab checkout.

Exams

Exams are a chance for you to demonstrate your comprehension of the course material and are worth approximately 60% of your final grade.

Evening exam schedule:

| | | | |
|-------------|-------------------------------|---------|-----------------------|
| Exam I: | Wednesday, Feb. 7 | 8:00 PM | Elliott Hall of Music |
| Exam II: | Thursday, Mar. 7 | 8:00 PM | Elliott Hall of Music |
| Exam III: | Tuesday, Apr. 16 | 6:30 PM | Elliott Hall of Music |
| Final Exam: | Date and time to be announced | | |

- Attendance at exams is required. Absences are not excused except those documented by DRC or ODOS (GAPS, MAPS, MEAPS). Absences for required university-sponsored activities will be evaluated on a case-by-case basis. See the Brightspace Absences module for details and contact Mrs. Leah Everly (leverly@purdue.edu) for more information if needed.
- Your **one** lowest exam score will be dropped at the end of the semester to account for any other absence.
- If you have a direct conflict with another exam, class, or required university activity, you must report it through the Brightspace Absence Module **a minimum of one week before** the conflict to discuss your options. You will be asked to provide written verification of the conflict. If an emergency occurs, contact Leah Everly (leverly@purdue.edu) as soon as possible.
- Exams I, II, and III are each one hour in length. You should arrive at least 20 minutes before the exam start time. If you are more than 15 minutes late for an exam, you will not be allowed to take the exam and will receive a score of zero.
- Before Exam I, your exam seat assignment (location, level, aisle, row, and seat) will be posted on Brightspace. Make sure you check Brightspace before each exam. Take your PUID, your seat assignment, #2 pencils, and an appropriate calculator (see required materials in Brightspace) with you to the exam. You may not share a calculator with another student.

Final Exam

The final exam is comprehensive and is worth 300 points. The time and place will be announced mid-semester.

Wait until you know the date of the final exam before you make travel plans that might conflict with the exam. Final exams **will NOT be rescheduled** to accommodate your travel plans.

University policy on Final Exams states: *“Students scheduled for more than two (final) examinations in one calendar day are entitled to reschedule any examination in excess of two. . . It is the responsibility of the student to make necessary arrangements **before the last week of regularly scheduled classes.**”*

Determining Your Course Grade

Each of the assigned course activities for CHM 11500 is worth the number of points listed below. Before course grades are finalized at the end of the semester the following scores will be dropped:

- your *one* lowest homework score
- your *two* lowest recitation participation scores (at least)
- your *one* lowest pre-lab quiz score
- your *one* lowest lab report score
- your *one* lowest exam score or ½ final exam score (whichever is lower)

The total number of points for CHM 11500 will be distributed as follows:

| | | |
|-------------------------------|-----------------------|---|
| Homework..... | 130 pts..... | (best 13 of 14 assignments at 10 pts each) |
| Recitation Participation..... | 20 pts..... | (best 10 at 2 pts each) |
| Prelab Quizzes..... | 50 pts..... | (best 10 of 11 at 5 pts each) |
| Lab Reports..... | 200 pts..... | (best 10 of 11 at 20 pts each) |
| Exams..... | 450 pts..... | (3 at 150 pts each) |
| Final Exam..... | 300 pts..... | (comprehensive) |
| Sub-total..... | 1150 pts | |
| <u>Dropped exam</u> | <u>-150 pts</u> | (drop lowest exam score or ½ final exam score, whichever is less) |
| Total..... | 1000 pts | |

Extra Credit.....Up to 15 pts may be available at the discretion of the instructors

The total points available for exams is 600. Your exam total will be determined as follows: Your total points earned on the Final Exam will be divided by 2 and considered as two identical scores, F1 and F2 (each = total final exam points/2). These scores will be compared with your scores on Exams I-III and the lowest of these scores will be dropped (i.e., not counted into your total points). The remaining 4 scores will comprise your exam total.

Up to 15 points of extra credit may be available for completing extra credit assignments on Achieve or through Brightspace.

At the end of the semester, the total scores for all students will be arranged in numerical order, the score that corresponds to either the 99th percentile (S_{99}) will be determined, and then letter grades will be assigned based on this percentile score as follows:

| | |
|-----|--|
| A: | Total Score $\geq 0.93 \times S_{99}$ |
| A-: | $0.90 \times S_{99} \leq$ Total Score $< 0.93 \times S_{99}$ |
| B+: | $0.86 \times S_{99} \leq$ Total Score $< 0.90 \times S_{99}$ |
| B: | $0.83 \times S_{99} \leq$ Total Score $< 0.86 \times S_{99}$ |
| B-: | $0.80 \times S_{99} \leq$ Total Score $< 0.83 \times S_{99}$ |
| C+: | $0.76 \times S_{99} \leq$ Total Score $< 0.80 \times S_{99}$ |
| C: | $0.73 \times S_{99} \leq$ Total Score $< 0.76 \times S_{99}$ |
| C-: | $0.70 \times S_{99} \leq$ Total Score $< 0.73 \times S_{99}$ |
| D+: | $0.66 \times S_{99} \leq$ Total Score $< 0.70 \times S_{99}$ |
| D: | $0.63 \times S_{99} \leq$ Total Score $< 0.66 \times S_{99}$ |
| D-: | $0.60 \times S_{99} \leq$ Total Score $< 0.63 \times S_{99}$ |
| F: | Total Score $< 0.60 \times S_{99}$ |

This system has several advantages:

- Unlike a *curved scale*, it encourages cooperation among students because NO student is penalized when another is successful.
- Unlike an *absolute scale*, it tends to neutralize the effects of differences from one semester to another and thereby ensures that the same criteria are used to assign grades from one semester to another.

This approach to grading means that the grade you get in this course depends primarily on *your own*

effort and performance. *It also ensures that all students who do well in the course will get good grades.*

- Periodically during the semester, your total points will be calculated and tentative grade cutoffs will be posted so that you can see how well you are doing in the course. Note that these tentative grade cutoffs will be based on an absolute (90/80/70/60) grading scale (i.e., earning 90% of the maximum possible points is an A, 80% is a B, etc.).
- Check all your grades on Brightspace regularly. If there are any errors or discrepancies, notify the lecture coordinator within 2 weeks of a grade update being announced.
- Save all returned graded papers until after you have received your course letter grade for CHM 11500. To resolve any discrepancies, your paper(s) will need to be reviewed.

| Week | Lecture | Date | Lecture Topics for Spring 2022 | Textbook Reading Assignment | Lab | Lab Reading Assignment | Exams |
|------|---------|------|---|--|---|----------------------------------|--|
| 1 | 1 | 1/9 | Introduction and Review Matter and energy; SI units and unit conversions; significant figures; conservation laws; atomic structure and elements; ionic and covalent compounds | 1.1, 1.4, 1.5, 2.2, 2.3, 2.5, 2.6, 2.7, 2.8, 2.9 | Check-In; Safety Procedures; Safety Certification Quiz | | |
| | 2 | 1/11 | Review Moles and molar mass; molecular formula; balancing chemical equations; stoichiometry and limiting reagents | 3.1, 3.2, 3.3, 3.4 | | | |
| 2 | 3 | 1/16 | Review Concentration terms; ionic equations; precipitation reactions and solubility rules; acid-base reactions; gas laws | 4.1, 4.2, 4.3, 4.4, 5.3, 5.4 | no lab MLK Day University Holiday | | |
| | 4 | 1/18 | Thermochemistry | Chapter 6 | | | |
| 3 | 5 | 1/23 | Thermochemistry | Chapter 6 | L1: How Can We Make Accurate and Precise Measurements? | | |
| | 6 | 1/25 | Nuclear Chemistry | Chapter 24 | | | |
| 4 | 7 | 1/30 | Nuclear Chemistry | Chapter 24 | L2: Calorimetry (What Variables Affect Heat of Reaction?) | textbook 2.8, 4.1, 4.2, 4.3, 4.4 | |
| | 8 | 2/1 | Nuclear Chemistry | Chapter 24 | | | |
| 5 | 9 | 2/6 | The Atom and Spectroscopy Atomic Spectroscopy, ionization energies, shells | 7.1, 7.2, 7.4 (part, pp. 314-315, 319-322) | L3: Do You See the Light? | textbook 1.5 | |
| | 10 | 2/8 | The Atom and Spectroscopy Energy of orbitals, electron configurations | 8.2 | | | |
| 6 | 11 | 2/13 | The Atom and Spectroscopy UV/Vis spectroscopy, calibration | 13.1, 13.4, 13.5 and pp. 308-309 | L4: How Can Absorption of Light Be Used to Determine the Concentration of a Compound in Solution? | textbook 1.5, 4.1, 4.4 | Wednesday, February 8, EXAM I – 8:00 PM |
| | 12 | 2/15 | Trends in Chemical Reactivity Periodic trends in atomic properties | 8.3, 8.4, 2.7, 2.8 | | | |
| 7 | 13 | 2/20 | Trends in Chemical Reactivity Chemical bonding and trends | 9.1-9.3, 9.6, 6.5 | L5: Which Cereal Contains the Most Iron? | textbook 4.1 and pp. 308-309 | |
| | 14 | 2/22 | Trends in Chemical Reactivity Bond energies, lattice energy | 6.2, 6.4, 9.4 | | | |
| 8 | 15 | 2/27 | Review | | L6: How Can We Produce a Salt from an Element? | | |
| | 16 | 2/29 | Molecular Structure : Lewis structures, electronegativity/ polarity, formal charge | 10.1, 9.5 | | | |

| Week | Lecture | Date | Lecture Topics for Spring 2022 | Textbook Reading Assignment | Lab | Lab Reading Assignment | Exams |
|------|---------|------|---|--|--|--|--|
| 9 | 17 | 3/5 | Molecular Structure Resonance, shapes of molecules, molecular polarity | 10.2, 10.3 | No Labs – Compensation for evening exams. | textbook 3.4 and p. 83 (Basic Separation Techniques) | Thursday, March 9, EXAM II - 8:00 PM |
| | 18 | 3/7 | Molecular Structure Intermolecular forces | 12.3, 13.1 | | | |
| 10 | 19 | 3/12 | No Classes - Spring Break | | | | |
| | 20 | 3/14 | | | | | |
| 11 | 21 | 3/19 | Organic Chemistry Hybridization (Valence Bond Theory) | 11.1, 11.2 | L7: How Does Molecular Shape Affect Polarity? | textbook 10.1-10.3 | |
| | 22 | 3/21 | Organic Chemistry Organic compounds, functional groups | 15.1, 15.2, 15.4 | | | |
| 12 | 23 | 3/26 | Organic Chemistry Polymers | 15.5, pp. 516-520 | L8: How Can We Use Chromatography to Separate Plant Pigments? | p. 655 (Table 15.5) | |
| | 24 | 3/28 | Organic Chemistry IR Spectroscopy, bond energies | <i>Infrared spectroscopy</i> , pp. 384-385 | | | |
| 13 | 25 | 4/2 | Biochemistry Biological molecules (sugars, carbohydrates) | 13.2, 15.6, and pp. 431-432 | L9: What are Synthetic and Biological Polymers? | textbook 15.5 and pp. 516-520 (Polymeric Materials) | |
| | 26 | 4/4 | Biochemistry Biological molecules (lipids, DNA) | 13.2, 15.6, and pp. 431-432 | | | |
| 14 | 27 | 4/9 | Solution Properties Phase Changes, Solution Process | 12.2, 13.3 | L10: What Are The Molecular Interactions of Washing? | | Wednesday, April 12, EXAM III - 8:00 PM |
| | 28 | 4/11 | Solution Properties Colligative Properties | 13.6 | | | |
| 15 | 29 | 4/16 | Inorganic Chemistry Crystal Structures | 12.6 | L11: What do Crystals Look Like on the Atomic Scale? | | |
| | 30 | 4/18 | Inorganic Chemistry Crystal Structures | 12.6 | | | |
| 16 | 31 | 4/23 | Inorganic Chemistry Advanced Materials | 12.7 and <i>The Future of Energy Use</i> , pp. 281-285 | Check-out (You must attend or be charged a \$45 failure-to-check-out fee, PLUS the cost of replacing dirty, damaged or missing equipment.) | | |
| | 32 | 4/25 | Review | | | | |
| | | | Final Exam Week – (4/29 – 5/4) DO NOT make travel plans until you know the date(s) your Final Exam(s). | | | | Final Exam - TBD |

