Instructors:
Dr. Suzanne Bart, sbart@purdue.edu  
Dr. Scott McLuckey, mcluckey@purdue.edu  
Dr. Tong Ren, tren@purdue.edu  
Dr. Gudrun Schmidt, gudrun@purdue.edu  
Dr. Jon Wilker, wilker@purdue.edu

Office hours: Refer to the schedule on the course Brightspace page.

Lectures: In person (WTHR 200) and recorded via Boilercast  
Lecture meets two times per week, according to your class schedule.  
CRNs: 14183, 14184, 26978, 22203, 25623, 19394, 26977

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

Recitation: In-person  
Recitations meet Mon. - Fri. for 50 minutes, according to your class schedule.

Head Teaching Assistants (Lab Supervisors): Angana De (de8@purdue.edu), Ilayda Kelley (ikelley1@purdue.edu), Angelique Ithier (aithier@purdue.edu), Courtney Newberry (newberrc@purdue.edu), Nicolas Pizzala (npizzala@purdue.edu), and Lan Xu (wu851@purdue.edu), located in CHAS during lab periods. They will visit your lab periodically throughout the lab period to answer questions, enforce safety regulations, etc. Your TA can contact them for technical and procedural questions during lab.

General Chemistry Office, BRWN 1144, genchem@purdue.edu  
Marybeth Miller, Course Coordinator, BRWN 1144D, mille201@purdue.edu  
Marlene Miller, Administrative Assistant, working remotely, marlenem@purdue.edu  
Melissa Roadruck, Administrative Assistant, BRWN 1144, 765-494-5252, melissa@purdue.edu

The General Chemistry Office handles all the administrative details associated with the course. Direct all non-chemistry questions about the course to this office. For example, contact us to discuss accommodations, to obtain grade checks, to discuss time conflicts, to get clarification on course policies, to resolve grade issues, and to get signatures on university forms such as add/drop forms. We are able to help you with a variety of requests so you can maximize your success in general chemistry.

Note: All employees and visitors to the General Chemistry office are required to wear masks and maintain 6-foot social distancing.
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 nuclear chemistry, quantum theory and atomic structure, periodic trends, thermochemistry, 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 an understanding of the physical properties and a 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 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. Some office hours will be conducted using Microsoft Teams. It will be important for you to learn which site to use for which type of assignment.

Weekly Assignments
During most weeks, you will have the following assignments:

<table>
<thead>
<tr>
<th>Item</th>
<th>Platform</th>
<th>Day</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prelab Quiz</td>
<td>Brightspace</td>
<td>Sundays</td>
<td>due 11:59 PM</td>
</tr>
<tr>
<td>Homework</td>
<td>Achieve</td>
<td>Mondays</td>
<td>due 11:59 PM</td>
</tr>
<tr>
<td>Lab Report</td>
<td>Gradescope</td>
<td>at the end of your assigned lab period</td>
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</tbody>
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Required Materials

Textbook: The textbook used in CHM 11500 is Chemistry: The Molecular Nature of Matter and Change, 9th 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 for $55. See Brightspace for further information.

Achieve: In CHM 11500, you are required to complete homework and quizzes online using the Macmillian Achieve program. You can purchase instant access via the link on Brightspace ($41.60 for one semester access or $59.20 for multi-semester access) 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 and use Teams/OneNote and other programs free. Go to https://www.itap.purdue.edu/shopping/software/product/office365.html and log in using your Purdue account.

Laboratory Digital Materials Charge: Lab instructions, photos, and report forms will be provided digitally. A link for purchasing the digital materials ($35) will be provided on Brightspace.

Lab materials: In addition to the digital materials, you are also required to have approved safety (splash) goggles and an appropriate facemask.

Protect Purdue Pledge

“Being a part of the Boilermaker community means that each of us must take extraordinary steps to stay well and persistently protect each other, on campus and in the community. Accountable together, I pledge to take responsibility for my own health, the protection of others and help keep the Purdue community safe from spread of COVID-19 and other infections as identified and instructed by the university.” https://protect.purdue.edu/pledge/

The Protect Purdue Plan, which includes the Protect Purdue Pledge, is campus policy and as such all members of the Purdue community must comply with the required health and safety guidelines. Please refer to https://protect.purdue.edu/ for the most up-to-date protocols.

Students who are not engaging in required protocols (e.g., wearing a mask) will be offered the opportunity to comply. If non-compliance continues, possible results include instructors asking the student to leave class or instructors dismissing the whole class. Students who do not comply with the required health behaviors are violating the University Code of Conduct and will be reported to the Dean of Students Office with sanctions ranging from educational requirements to dismissal from the university.

Any student who has substantial reason to believe that another person in a campus room (e.g., classroom) is threatening the safety of others by not complying (e.g., not wearing a mask) may leave the room without consequence. The student is encouraged to report the behavior to and discuss next steps with their instructor. Students also have the option of reporting the behavior to the Office of the Student Rights and Responsibilities (https://www.purdue.edu/odos/osrr/).

See the attendance and absence information on p. 15 for details on how we will handle absences due to quarantine or isolation.

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/](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](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](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/](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](http://www.purdue.edu/drc). To implement accommodations, you must follow the instructions provided by the Disability Resource Center, in addition to doing the following.

Share your “Notification of Course Accommodations” with the CHM 11500 instructors via the AIM system at least one week before an exam or assessment for which accommodations are desired. We may require an in-person or virtual meeting to discuss certain accommodations. Implementation of accommodations may not be possible if insufficient notification is given.

**Late Registration:**

If you register late, notify Marybeth Miller no later than Fri. Sept. 10 to see about the possibility of making up missed assignments.
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.

“Shelter in Place” means seeking immediate shelter inside a building or University residence. This course of action may need to be taken during a tornado, earthquake, release of hazardous materials in the outside air, active shooter, building intruder, or a civil disturbance. If you hear the All Hazards Outdoors Emergency Warning Sirens or are notified via text or other means, immediately go inside a building to a safe location and use all communication means available to find out more details about the emergency. Remain in place until police, fire, or other emergency response personnel provide additional guidance or tell you it is safe to leave. There is no “all safe siren;” the notification will come via text, internet, or email announcement.

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](https://www.purdue.edu/provost/teachinglearning/honor-pledge.html)

Academic Integrity
All students are expected to be familiar with Purdue’s policies on academic integrity ([https://www.purdue.edu/odos/academic-integrity/](https://www.purdue.edu/odos/academic-integrity/)).

“Dishonesty in connection with any University activity may result in informal action or disciplinary sanctions. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty. The commitment of acts of cheating, lying, stealing, and deceit in any of their diverse forms (such as the use of ghost-written papers, the use of substitutes for taking examinations, the use of illegal cribs, plagiarism, and copying during examinations) is dishonest and must not be tolerated. Moreover, knowingly to aid and abet, directly or indirectly, other parties in committing dishonest acts is in itself dishonest.” From University Senate Document 72-18.

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 on social media for the express purpose of letting other students copy it is not acceptable. Such a use of technology does not help you learn the material and is considered academic dishonesty.

All collaboration with others (such as Group Me, Zoom, discussion boards, text, in-person, etc.) during a quiz or exam is prohibited.

Using online resources such as Chegg to gain answers to any graded assignment (including homework, labs, quizzes and exams) is not allowed. Posting course materials to websites is a violation of copyright laws and is not allowed. The CHM 11500 instructors can obtain user information from Chegg and other sites when inappropriate course material is posted. This information will be investigated.

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.

Students who observe an issue of academic integrity can report it to the Office of the Dean of Students (https://www.purdue.edu/odos/ - use the General Incident Report to report anonymously), call 765-494-8778 or email integrity@purdue.edu.

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 online or 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 and exams, 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 lecture.
- 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 Netflix, music, texting, 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, office hours or scheduled online meetings.

**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 will be posted on Brightspace in the Resources module.

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).

**Reading Assignments and Learning Objectives**

- Reading assignments will be provided in lecture and on Brightspace (in the weekly checklist). 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. However, do not come to lecture if you are sick, have COVID-19 symptoms, or are directed to isolate or quarantine.
- 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, iPods 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 are held M-F 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.
- You are required to follow all Protect Purdue guidelines in recitation. See p. 3.

**Homework (Achieve)**
- You will have a weekly homework assignment on the Achieve platform, usually due on Mondays by 11:59 PM. All links and due dates will be in the Homework module on Brightspace.
- You will have five attempts for each 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.
- No time extensions are 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.
- 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](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.) via Brightspace. You will take pre-lab quizzes on Brightspace.

Laboratory Attendance and Participation
Lab attendance is required since CHM 11500 is a laboratory course. However, do not come to lab if you are sick, have COVID-19 symptoms, or are directed to isolate or quarantine.

Replacement assignments (virtual labs) are possible only for approved GAPS or MAPS absences or verified COVID-19 isolation or quarantine (see pp. 15-16). The one lowest lab score is dropped at the end of the semester to account for all other absences.

If the Protect Purdue Health Center or the Indiana State Board of Health directs you to quarantine or isolate and you miss a lab, then you must contact Ilayda Kelley (ikelley1@purdue.edu) to request a replacement assignment within one week of the end of your quarantine/isolation period. You must also forward your PPHC documentation to ikelley1@purdue.edu.

In the cases below, a zero score (failure to complete) will be assigned:
- being absent for any reason (except approved GAPS/MAPS or verified COVID-related absences)
- 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 2. You must score at least 20/25.
- If you miss lab check-in, or score less than 20/25, then you must make alternate arrangements to 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, including wearing a facemask at all times (see image below). Face shields are optional and are available from the storerooms in CHAS.
- Goggles are required at all times in the laboratory, including during clean up and lab check-out. 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 (translucent or transparent) 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.

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

- The purpose of the pre-lab quizzes on Brightspace is to ensure that you have adequately prepared for the lab by reviewing the concepts and procedure.

- You have **two**, timed (10 minute) attempts for each quiz. The quiz will *automatically* submit after 10 minutes. Do not click “Begin” until you are ready to take the quiz because you cannot pause, exit, cancel, resume later, etc.

- For the best chance of success, take the pre-lab quiz *after* reading the lab materials and completing the prelab practice questions. You are encouraged to use the lab materials and your work for the prelab practice questions while taking the quiz.

- Quizzes are *individual* assignments. Collaboration with other students *during the quiz* is not allowed. (However, you are encouraged to work together in advance to complete the prelab questions.)

- Pre-lab quizzes are due each week on Sundays by 11:59 PM.

- If you do not attempt the quiz before the time it is due, you will receive a zero for the quiz (out of 10 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. The lowest prelab quiz score is dropped at the end of the semester to account for illnesses, technical difficulties, and other situations.
Lab Reports

- For each lab project, you will complete a lab report in pairs or groups.
- Complete the lab report appropriately:
  - Answer in full sentences for open-ended questions.
  - **Make sure your handwriting is clear and legible if you are using a stylus on a tablet or uploading photos of your handwritten notes.**
  - 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.
- 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 each other’s answers).
- Lab reports are due at the end of your lab period, unless you are told otherwise. Details about how to submit the reports will be communicated via Brightspace and email. Reports that are up to 24 hours late are worth 50% credit. Reports that are more than 24 hours late are worth no credit.

Lab Exercises

During each of the exam weeks, you will complete a lab exercise worth 10 points. No lab report or prelab quiz is required for these activities. See pp. 17-18 for the lab and exam schedule.

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 or Marybeth Miller within one week of the graded report becoming available to you.
- Make sure you review lab content because exams will include lab-related questions.

Lab Equipment

You will share an assigned laboratory drawer of equipment with the student(s) in your row. 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 unusable 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-useable 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 in your row 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. You must arrive on time, properly dressed and wear goggles. If you arrive more than 15 minutes late, you will be asked to leave the lab and will be assessed a fee of $45.
- You and your lab partners will clean and inventory the drawer for your TAs’ inspection. All missing or un-usable equipment must be replaced at that time.

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

Exams:
- will be administered during your lab period in your assigned lab room,
- will be administered using the Variate platform on the lab iPads,
- are worth 150 points each,
- consist of multiple-choice and numeric entry (calculations) questions,
- have one attempt for each question, and
- have a 60 minute time limit (unless you have extended time through the DRC).

- Exam questions will be based on the Learning Objectives.
- Your lowest exam score or ½ your final exam score will be dropped at the end of the semester.
- Zero scores caused by absences that are GAPS/MAPS/COVID-related will be handled individually. See pp. 15-16. Contact Marybeth Miller with questions.
- After you complete the exam, you will stay in lab to do a graded (10 point) lab exercise.

**Final Exam**
The final exam is comprehensive and is worth 300 points. The format of the final exam will be communicated to you during the 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

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

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>140 pts</td>
<td>(best 14 of 15 assignments at 10 pts each)</td>
</tr>
<tr>
<td>Recitation Participation</td>
<td>20 pts</td>
<td>(best 10 at 2 pts each)</td>
</tr>
<tr>
<td>Prelab Quizzes</td>
<td>70 pts</td>
<td>(best 7 of 8 at 10 pts each)</td>
</tr>
<tr>
<td>Lab Reports</td>
<td>140 pts</td>
<td>(best 7 of 8 at 20 pts each)</td>
</tr>
<tr>
<td>Lab Exercises</td>
<td>30 pts</td>
<td>(3 at 10 pts each)</td>
</tr>
<tr>
<td>Exams</td>
<td>450 pts</td>
<td>(3 at 150 pts each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>300 pts</td>
<td>(comprehensive)</td>
</tr>
<tr>
<td>Sub-total</td>
<td>1150 pts</td>
<td></td>
</tr>
</tbody>
</table>

Dropped exam __150 pts__ (drop lowest exam score or ½ final exam score, whichever is less)

Total __1000 pts__

Extra Credit __10 pts__ (Adaptive assignments on Achieve)
- 5 pts (Beginning of semester survey on Brightspace)

The total points available for quizzes/exams is 600. Your exam total will be determined as follows: Your points earned on the Final Exam will be divided in half and considered as separate scores, F1 and F2. 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 will be available for completing extra credit assignments on Achieve and a survey on 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−: $0.90 \times S_{99} \leq \text{Total Score} < 0.93 \times S_{99}$
B+: $0.86 \times S_{99} \leq \text{Total Score} < 0.90 \times S_{99}$
B: $0.83 \times S_{99} \leq \text{Total Score} < 0.86 \times S_{99}$
B−: $0.80 \times S_{99} \leq \text{Total Score} < 0.83 \times S_{99}$
C+: $0.76 \times S_{99} \leq \text{Total Score} < 0.80 \times S_{99}$
C: $0.73 \times S_{99} \leq \text{Total Score} < 0.76 \times S_{99}$
C−: $0.70 \times S_{99} \leq \text{Total Score} < 0.73 \times S_{99}$
D+: $0.66 \times S_{99} \leq \text{Total Score} < 0.70 \times S_{99}$
D: $0.63 \times S_{99} \leq \text{Total Score} < 0.66 \times S_{99}$
D−: $0.60 \times S_{99} \leq \text{Total Score} < 0.63 \times S_{99}$
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.

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**UNIVERSITY AND COURSE POLICIES**

**Attendance and Absences**

This course follows Purdue’s academic regulations regarding attendance, which states that students are expected to be present for every meeting of the classes in which they are enrolled.

Only the instructor can excuse a student from a course requirement or responsibility. For absences that you know about in advance, inform Marybeth Miller as early as possible so that we can discuss how your absence will be handled. In the case of unanticipated or emergency absences, contact Marybeth Miller as soon as you can.

Verified grief, military, and COVID-related (isolation/quarantine) absences are the only excused absences in CHM 11500. In these situations, the student or the student’s representative should contact the Office of the Dean of Students via email (odos@purdue.edu), phone (765-494-1747), or the form on their website (https://www.purdue.edu/advocacy/students/absences.html).

Please note that, according to Details for Students on Normal Operations for Fall 2021 announced on the Protect Purdue website, “Individuals who test positive for COVID-19 are not guaranteed remote access to all course activities, materials, and assignments.”

The lowest score in each category (lab report, prelab quiz, HW, exam) is dropped at the end of the semester to account for absences due to illnesses, trips, conflicts, or other situations that are not excused absences. This includes internet or related technology issues that may have prevented you from completing a lab report, prelab quiz, or homework. If you have concerns about how an absence will affect your course grade, contact your instructor or Marybeth Miller at the time of the absence.

Absence accommodations approved by the Disability Resource Center will be handled individually. Contact the General Chemistry office (genchem@purdue.edu) for more information.
Grief Absence Policy for Students (GAPS)
If you experience the death of a family member or close friend, notify the Office of the Dean of
Students (ODOS) at 765-494-1747. Scores for any missed assignments covered under a verified
GAPS absence will be pro-rated (assigned a score based on your average grade for that type of
assignment). Contact Marybeth Miller for more information.

Military Absence Policy for Students (MAPS)
If you are required to complete mandatory military training, notify the ODOS to request that a
notice of the leave be sent to instructors. Scores for any missed assignments covered under a
verified GAPS absence will be pro-rated (assigned a score based on your average grade for that
type of assignment). Contact Marybeth Miller for more information.

Adding/Dropping/Changing Sections

<table>
<thead>
<tr>
<th>CHEMISTRY DEPARTMENT DEADLINES FOR ADDING OR SWITCHING SECTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fri. Aug. 27: last day to add CHM 11500 or switch lab sections <em>without</em> instructor approval</td>
</tr>
<tr>
<td>Fri. Sept. 10: last day to switch lab sections <em>with</em> instructor approval*; last day to add CHM 11500 <em>with</em> instructor approval*</td>
</tr>
<tr>
<td>Fri. Sept. 17: last day to switch from another CHM course to CHM 11500 <em>with</em> instructor approval*</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UNIVERSITY DROP DEADLINES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mon. Sept. 6: last day to drop (cancel) a course using Scheduling Assistant without it appearing on your record*</td>
</tr>
<tr>
<td>Tues. Oct. 26: Last day to drop (cancel) CHM 11500 with a 'W'*</td>
</tr>
</tbody>
</table>
*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.
Failure to check out of lab will result in a $45 fee, and forfeiture of the right to determine the
acceptability of all drawer equipment.

► Late Registration: If you register late, notify the course coordinator no later than Fri. Sept. 10
to see about the possibility of making up missed assignments
<table>
<thead>
<tr>
<th>Week</th>
<th>Week of</th>
<th>Lecture #</th>
<th>Lecture Topic 2021</th>
<th>Labs/Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23-Aug</td>
<td>1</td>
<td>Introduction to CHM 11500; Review Topics</td>
<td>NO LAB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>Review Topics</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>30-Aug</td>
<td>3</td>
<td>Nuclear Chemistry 1</td>
<td>Check-in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4</td>
<td>Nuclear Chemistry 2</td>
<td>iPad orientation; do Safety Certification in Variate; practice vacuum filtration</td>
</tr>
<tr>
<td>3</td>
<td>6-Sep</td>
<td>5</td>
<td>Labor Day - no classes M (no lecture M or T)</td>
<td><strong>Lab 1</strong> - no lab on M; all other days meet</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>(M students will do Lab 1 on Nov. 22, i.e. Thanksgiving Week)</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>5</td>
<td>Nuclear Chemistry 3</td>
<td>Luminol (Do You See the Light?)</td>
</tr>
<tr>
<td>4</td>
<td>13-Sep</td>
<td>6</td>
<td>Thermochemistry 1</td>
<td><strong>Lab 2</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td>Thermochemistry 2</td>
<td>Calorimetry (What Variables Affect Heat of Reaction?)</td>
</tr>
<tr>
<td>5</td>
<td>20-Sep</td>
<td>8</td>
<td>Thermochemistry 3; Quantum Theory/Atomic Structure 1</td>
<td>Exam I</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9</td>
<td>Quantum Theory/Atomic Structure 2</td>
<td>Exercise 1: Demo pipet, buret, and volumetric flask to partner</td>
</tr>
<tr>
<td>6</td>
<td>27-Sep</td>
<td>10</td>
<td>Quantum Theory/Atomic Structure 3</td>
<td><strong>Lab 3</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>11</td>
<td>UV/Vis Spectroscopy/Beer-Lambert Law</td>
<td>Accurate and Precise Measurements</td>
</tr>
<tr>
<td>7</td>
<td>4-Oct</td>
<td>12</td>
<td>Periodic Trends/Trends in Chemical Reactivity 1</td>
<td><strong>Lab 4</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13</td>
<td>Periodic Trends/Trends in Chemical Reactivity 2</td>
<td>Absorption and Concentration (Spectroscopy)</td>
</tr>
<tr>
<td>8</td>
<td>11-Oct</td>
<td>14</td>
<td>October Break - no classes M/T</td>
<td>NO LAB</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Periodic Trends/Trends in Chemical Reactivity 3</td>
<td></td>
</tr>
<tr>
<td>Week</td>
<td>Dates</td>
<td>Lecture #</td>
<td>Lecture Topic 2021</td>
<td>Labs/Exams</td>
</tr>
<tr>
<td>-------</td>
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<td>-----------</td>
<td>----------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>9</td>
<td>18-Oct</td>
<td>15</td>
<td>Models of Bonding 1</td>
<td>Exam II</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16</td>
<td>Models of Bonding 2</td>
<td>Exercise 2: Prepare for Lab 6</td>
</tr>
<tr>
<td>10</td>
<td>25-Oct</td>
<td>17</td>
<td>Models of Bonding 3</td>
<td>Lab 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>18</td>
<td>Shapes of Molecules 1</td>
<td>Which Cereal Contains the Most Iron?</td>
</tr>
<tr>
<td>11</td>
<td>1-Nov</td>
<td>19</td>
<td>Shapes of Molecules 2</td>
<td>Lab 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>Shapes of Molecules 3</td>
<td>How Does Molecular Shape Affect Polarity?</td>
</tr>
<tr>
<td>12</td>
<td>8-Nov</td>
<td>21</td>
<td>Organic Chemistry 1</td>
<td>Lab 7</td>
</tr>
<tr>
<td></td>
<td></td>
<td>22</td>
<td>Organic Chemistry 2</td>
<td>What are Synthetic and Biological Polymers?</td>
</tr>
<tr>
<td>13</td>
<td>15-Nov</td>
<td>23</td>
<td>Polymers</td>
<td>Exam III</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24</td>
<td>IR Spectroscopy</td>
<td>Exercise 3: Chromatography</td>
</tr>
<tr>
<td>14</td>
<td>22-Nov</td>
<td>25</td>
<td>IMF 1</td>
<td>NO LAB for most. M sections will do Lab 1, Do You See the Light?</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Thanksgiving Break- no classes W, Th, F</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>29-Nov</td>
<td>26</td>
<td>IMF 2</td>
<td>Lab 8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>27</td>
<td>IMF 3; Concentration Terms</td>
<td>What are the Molecular Interactions of Washing?</td>
</tr>
<tr>
<td>16</td>
<td>6-Dec</td>
<td>28</td>
<td>Phase Changes</td>
<td>Lab Check-out - You must attend or you will be charged a $45 failure-to-check-out fee plus the cost of replacement glassware.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>29</td>
<td>Colligative Properties</td>
<td></td>
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<tr>
<td>Finals Week</td>
<td>13-Dec</td>
<td></td>
<td></td>
<td>Final Exam - TBA</td>
</tr>
</tbody>
</table>