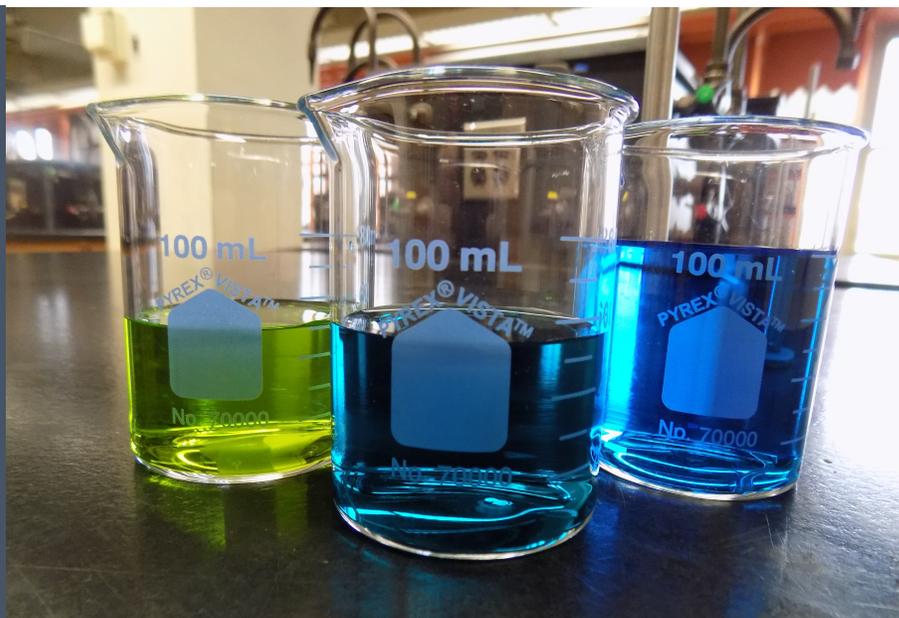


CHEM 1061

Chemical Principles I

Spring 2022

3 Credits



Instructor

Dr. Emily Pelton
(she/her)
epelton@umn.edu

Office Hours

Posted on course
Canvas page

Course Meetings

9:45 – 11 am
TTh
100 Smith Hall

Course Website

<https://canvas.umn.edu/courses/290354>

Overview

This course is designed as an undergraduate general chemistry course that provides a broad survey of chemistry. We will start with a discussion of matter, chemical reactions, and stoichiometry. From there, we will focus on the theories that govern gas behavior, thermochemistry, and atomic structure from a quantum perspective. We will use our understanding of atomic structure to focus on periodic trends and how atoms bond together to form compounds. We will then proceed into a discussion of molecular and solution properties and a brief discussion of basic organic chemistry.

During the term, students will complete weekly online homework assignments. There will be thirteen chapter quizzes, and at the end of the course, students will complete a cumulative final exam.

CHEM 1061/5 and 1062/6 are introductory chemistry courses with accompanying lab courses. The two courses, with labs, are together designed to prepare a student for a major in science (including chemistry and engineering) and the health sciences. Each lecture/lab pair fulfills the core physical science requirement.

Why is this course considered an important component of my liberal education?

A liberally educated person is one who can understand complex issues, find credible information, analyze that information, problem-solve, and draw reasonable conclusions based on facts. This course, along with lab, will develop these skills and prepare you to be an informed citizen and life-long learner.

Prerequisites

In order to enroll in CHEM 1061, students must have either

- passed the Chemistry Placement Exam and been advised to take this course, or
- completed CHEM 1015 or an equivalent course with a grade of C- or better.

Goals

As a component of your undergraduate education here at the University of Minnesota, this course will offer you the opportunity to identify, define, and solve problems and will provide a strong foundation for the mastery of knowledge in the chemical sciences. Because CHEM 1061 is designed to prepare students for CHEM 1062, when students leave CHEM 1061, they should demonstrate content mastery, the ability to solve a variety of multistep chemistry problems correctly and efficiently, and time and resource management. Let's look at each of these skills in turn and examine why they're important.

Content mastery. We will learn about a variety of chemical principles and phenomena, and our course content will be applicable in both your future coursework and the real world. In our class, you will demonstrate content mastery by completing homework assignments and earning points on quizzes. The bulk of the points in our class will come from this area.

Ability to solve a variety of multistep chemistry problems correctly and efficiently. This is important because **it prepares you for the real-world career and employment skills needed beyond our course.** For example, when a painter is hired to paint a single bedroom, the resident wants confidence the painter knows all of the steps to paint the room with the best possible outcome. It's not helpful for the resident if the painter perfectly paints the neighbor's bathroom instead (not correct) or tears down the entire house, rebuilds it from scratch, and eventually paints the whole thing, including the bedroom (not efficient). In our class, you will demonstrate these skills by completing homework assignments and earning points on quizzes.

Time and resource management. Time and resources are ultimately limited in both the concrete and the abstract senses. This semester, you will have different pulls on your time and energy, whether it's your coursework, employment, family, personal life, extracurricular activities, etc., and **you will need to decide how to manage and balance your different commitments, your time, and your resources most effectively for you and your overall goals.** There are a number of campus resources designed to help you – please reach out to any and all that might be helpful for you! A list with many of these resources is provided on Canvas.

For our class, the effectiveness of your study strategies and the amount of time you spend each week engaging in course content, working on ALEKS homework, practicing course material on your own, and taking quizzes is completely up to you. A number of resources are shared during the semester and are posted on our course website, designed to help you be efficient and successful in the course. How (and if) you employ and implement these resources is also completely up to you, and you must seek out these resources and use them effectively. **Time and resource management are skills that require practice and, if developed now, will serve you throughout your college and professional career.**

Time management. You will demonstrate time management by meeting the deadlines for graded activities in our course. All homework assignments are available to work on and complete from the beginning of the semester, and quiz windows are open for 24 hours each week.

- Working on ALEKS homework in small, shorter sessions throughout the week and taking quizzes early in the open window to account for possible technical issues are two indications a student is successfully demonstrating time management.
- Cramming ALEKS homework into one or two long sessions or waiting until the last minute to resolve an issue ("last minute" = an hour or two before a homework assignment or quiz is due) suggest there are opportunities for improved time management.

Almost everyone procrastinates at one time or another (even me!), but developing strategies *now* to manage your time successfully *before* reaching a deadline will save you unnecessary stress and missed opportunities later on.

Resource management. You will demonstrate resource management by actively seeking out and effectively using the resources you are provided. In addition to our content resources (lecture videos, textbook, ALEKS, etc.), these resources include (but are not limited to) this syllabus, how-to documents, FAQs, University services, office hours, the General Chemistry tutor room, and class-wide messages. All of these resources are available, communicated, and posted or linked on the course site so that you can find them quickly on your own (instead of having to wait for a response).

- Independently seeking out and employing the resources provided (such as using the "best" strategies for practice questions, instead of the "good" or "better" strategies or not doing practice questions at all) is an indication a student is successfully demonstrating resource management.
- Not setting up your ALEKS account correctly or not fully reading class-wide E-mails and announcements suggest there are opportunities for improved resource management.

You will have (and should ask) questions throughout the semester – otherwise you wouldn't be learning anything new! – and you don't want to waste time and energy being confused. Critically examining and using all of your available resources *beforehand*, though, could help you answer your question, saving you time and energy.

Course Materials

All course materials are available for purchase from U of M Bookstores in Coffman Union and St. Paul Student Center.

Required

Textbook and ALEKS: *Chemistry, 9th edition*, Martin Silberberg and Patricia Amateis, McGraw-Hill, 2021

Access to an internet-capable computer with Google Chrome, a working webcam, and a working microphone

Laminated periodic table/equation sheet: used when you take quizzes and exams

Dry-erase marker: used when you take quizzes and exams

Mirror or other reflective surface: approximately 6" by 6"; used when you take quizzes and exams

Non-programmable scientific calculator

Recommended

Student solutions manual: *Chemistry, 9th edition* (free; available from the General Chemistry tutor room or from Dr. Pelton during office hours)

Molecular modeling kit

Inclusive Access

This semester we will be using the 9th edition of Silberberg/Amateis' Chemistry with ALEKS. You can access your E-text via the ALEKS link in our course Canvas site.

We are making the course material available because it is much more cost-effective than purchasing the physical book. Your student account will be charged \$63.75 before the beginning of the semester for access. Those wishing to opt out (purchasing their textbook *and* ALEKS access elsewhere) are refunded after the drop/add period. All students who drop the course within the drop/add period will be automatically refunded.

An E-mail will be sent to all students with opt out instructions. The E-mail will have the subject line "Course Materials Charged on Your Student Account" and will come from verbasoftware.com. Sometimes the message goes to a spam or junk folder, so please be on the lookout for this message. Students have until January 28, 2022, to opt out of the course material. If you have additional questions, contact UMN Bookstores directly at inclusiveaccess@umn.edu.

Course Websites

Lecture (CHEM 1061) Canvas site. Students registered in this course must use the Canvas site created for this class. This site is where you will find any information associated with the lecture portion of the course. It will contain a course calendar, syllabus, and resources to help you succeed in our course. You will take quizzes through Proctorio, accessed through the course Canvas site. You will find your quiz scores posted here as well, under the "Grades" link.

Lab (CHEM 1065) Canvas site. This site is where you will find your lab syllabus and multiple resources associated with completion of the laboratory projects. You will view your laboratory grades here, under the "Grades" link. Please note that lab is a separate, graded course that must be taken at the same time you take our lecture course.

ALEKS site. There is a link from the lecture Canvas site to the ALEKS homework system. Follow the instructions there to set up your account correctly. You can find your homework scores under the "Gradebook" link in ALEKS.

Calculators

Acceptable calculators. Any one-line display scientific calculator is allowed. The TI-30Xa is the suggested calculator for this and all CHEM 1XXX courses and for most introductory physics courses. The TI-30X IIS is an acceptable two-line calculator. These calculators are available in the U of M Bookstores. Many other two-line calculators are programmable and would therefore *not* be allowed. If you are concerned about whether or not your calculator would be acceptable, you could purchase the recommended calculator for the course, just in case.

Calculators during quizzes. Calculators may not be shared during quizzes. If you are concerned about battery failure during the quiz, bring a second calculator or extra batteries with you. In addition, the Proctorio system has a built-in calculator feature that you can use during quizzes.

Can I use my graphing calculator?

No. Graphing and/or programmable calculators are FORBIDDEN on quizzes or the Final Exam. Their presence during, or use on, an exam will be considered cheating. Only non-programmable calculators with limited memory will be allowed for use during quizzes and the Final Exam.

ALEKS Homework

You will have regular, required assignments using ALEKS, and **you should expect to spend several hours a week working in ALEKS**. Just how much time you have to spend will depend critically on how efficiently you use the ALEKS program. An introduction is posted on our course Canvas site to help you get the most from ALEKS with the least time and effort. You must follow the instructions in Canvas to ensure you're registered for the correct homework site, and you must use your UMN E-mail address (@umn.edu) to earn credit.

Weekly homework assignments are due on Thursdays by 12 pm noon Central. Because assignments are available well in advance of the due date, *no make-up opportunities* are allowed. Full pie is due no later than Monday, May 2, at 11:59 pm Central.

Homeworks A-M. You are expected to reach certain milestones in your mastery of the entire curriculum each week. The purpose of these weekly assignments is to keep you working regularly and consistently within the program so that you do not fall behind in our course content.

You are also expected to enroll in CHEM 1061 with genuine mastery of a wide range of topics from either high school chemistry and math and/or from CHEM 1015. The goal of the two prerequisite review assignments (Homeworks A and B) is to determine which topics you didn't master or have forgotten through lack of recent practice and recover them. These two assignments are due early in the term and have many topics because they should be review.

Final mastery (full pie). This portion of your grade will be determined just by your overall level of mastery on the last day of classes (how many topics ALEKS are in your pie at the end of the term), even if you master the skill well after its initial deadline earlier in the semester. This should also be motivation to restore topics to your mastery list that you may have lost at reassessment.

How to be Successful in CHEM 1061

Every student defines success differently. At the beginning of the term, define your goal(s) for CHEM 1061 and make a specific, detailed plan on how to get there.

If you get nothing else, take this: **Attending class and doing the online homework IS NOT ENOUGH to prepare you to do well on quizzes.**

In the past, students who have been successful in the course:

- Skim the textbook before each class meeting so that lecture is not the first time they see the material
- Attend every lecture and take excellent notes
- Actively work on practice problems given during class
- Complete all of the suggested practice problems for each chapter
- Finish the online homework on time
- Practice for quizzes as recommended
- Review and correct mistakes made during class, practice problems, homework, and quizzes

*I'm going to miss a class.
What should I do?*

If you miss a class meeting, you will need to find a classmate who is willing to share their notes with you! You are responsible for all announcements and material presented during lecture, as well as all in-class activities.

In-Class Activities

During class meetings, we will be employing a variety of in-class activities, including (but not limited to) demonstrations, in-class writing, problem-based learning, and quizzes. These activities are designed to help you engage in the class and master the course material. By diligently working on these problems during class meetings, you will be able to assess your mastery of the material and where you need more study.

Can I record demos?

No. In-class demos are like going to a concert – you want to experience the demo in real life, not from behind a screen.

Mask Expectations

As of the writing of this syllabus, everyone is required to wear a mask while indoors while on campus. Because our class meetings will be held indoors, **you are required to wear a mask that meets the University's requirements during our class sessions**. Your mask must be properly fitted to cover your nose and mouth, wrap under the chin, and must not have any noticeable gaps. Additionally, you should carry two masks with you at all times to account for the possibility that a mask might be lost or spoiled. For more information, including what qualifies as a mask, please see: <https://safe-campus.umn.edu/return-campus/face-coverings>. To help ensure masks are worn at all times while in our classroom, eating and drinking during class is not permitted.

Quizzes and the Final Exam

Location. You can take your quizzes and Final Exam in any quiet, private or semi-private location of your choosing, as long as it has reliable, stable internet access for the duration of your quiz.

Times. The quiz window will open each week on Thursdays at 12 pm noon Central and close Fridays at 12 pm noon Central. There is no time limit on quizzes, but you must complete the entire quiz in one continuous session. I strongly encourage you to **begin your quiz no later than 9 am on quiz days** to help ensure you have time to complete your quiz and help account for any technical difficulties you may encounter. I won't always be available to help with quiz questions or technical issues after 9 am on quiz days, so please plan accordingly. In addition, the Proctorio Information tab on Canvas gives the steps you should follow if you run into issues on quizzes. It is expected that, if you encounter *any* technical issues related to quizzes, you will first follow *all* of the steps posted there. You will not be able to access any quizzes after 12 pm noon Central on quiz days.

All quizzes and the Final Exam will be proctored electronically in Canvas using Proctorio. The final exam window will be open from 12 am midnight Central to 11:59 pm Central on Monday, May 9. You can take quizzes in any quiet, private or semi-private location with a stable internet connection. **Adjust your schedule NOW, and plan any travel, weddings, employment opportunities, meetings, etc. around these quiz dates and times.** If you have conflicts with any of these quiz dates and times, you should resolve them immediately or drop the course.

All quizzes, including the Final Exam, will be given **ONLY** at the scheduled dates and times. *No make-up quizzes or alternative quiz dates* are an option under any circumstances. If you are enrolled in a UMN course with a time conflict, you must submit a course conflict form. The Final Exam must be completed in order to earn a letter grade other than F in the course.

Format. Quizzes will consist of multiple choice, short answer, fill-in-the-blank, and matching questions and will cover material as outlined in the course calendar. The quizzes will be proctored and graded by a computer. **Make sure you fully understand how to set up your computer and prepare for E-proctoring in advance of the actual quiz (details are provided on Canvas).** The Final Exam will be cumulative and cover all material presented in the course.

Materials. You must have your U-Card or a photo ID, periodic table/equation sheet, dry erase marker, and a mirror at each of the quizzes and the Final Exam. All quizzes and the Final Exam are closed book and closed note, and no study aids or external resources are permitted. No smart phones, cell phones, programmable calculators, or other such electronic devices may be used at any time. Only non-programmable, non-graphing calculators are allowed (see specific Calculators policy) and remember, a calculator is provided within the Proctorio system for use during quizzes if you'd prefer.

Quiz regrades. After the quiz window closes (generally Friday afternoons), you will be able to review your quiz and how it was graded. Regrade requests must be submitted, via E-mail directly to the instructor, within seven days of quiz score posting.

Missed quizzes. In situations of a true emergency, serious illness, or University-sponsored travel, an excused absence may be granted for a quiz. To obtain an excused absence, students must contact the instructor as soon as circumstances allow to discuss the nature of the emergency and to arrange for documentation. The unweighted average of all of the student's other quiz scores will replace the zero from the excused quiz. Only one missed quiz will be replaced in this fashion. If circumstances prevent a student from taking more than one quiz, a meeting must be scheduled immediately with the instructor to discuss any options available. Student-athletes with a travel letter who miss a quiz due to University-related travel should also contact the instructor early in the semester to determine what arrangements may be able to be made. For more information, please see: <http://policy.umn.edu/education/makeupwork>.

Quiz dates

All chapter quizzes are due by 12 pm noon Central on the date listed.

The Final Exam is due by 11 :59 pm Central on the date listed.

PR (Ch. 1-2) January 21	Chapter 9 March 18
PR (Ch. 3-4) January 28	Chapter 10 – Lewis structures March 25
Chapter 5 February 4	Chapter 10 – VSEPR April 1
Chapter 6 - Calorimetry February 11	Chapters 11 & 15 April 8
Chapter 6 - Enthalpy February 18	Chapter 12 April 15
Chapter 7 February 25	Chapter 13 April 22
Chapter 8 March 4	Final Exam May 9

Grading

I want to encourage you to work hard in our class and give you many opportunities to demonstrate and apply what you are learning. You will demonstrate your mastery of our course material through working in ALEKS (online homework) throughout the semester and by completing quizzes that assess your mastery of skills in our class.

Students will be evaluated based on online homework and quiz/exam performance. The grading breakdown is as follows.

Weekly ALEKS HW (13)	13 x 10 points =	130 points
Full Pie (300 topics)	300 x ½ point =	150 points
Weekly quizzes (13)	13 x 30 points =	390 points
Final Exam		<u>130 points</u>
		800 points

A-range: 720-800 points
 B-range: 640-719 points
 C-range: 560-639 points
 D-range: 400-559 points
 F: below 400 points

Shaded letter grades (+/-) will be assigned within each range. For further details, please see policy.umn.edu/education/gradingtranscripts.

ALEKS. There are 13 weekly assignments in ALEKS, each worth 10 points. The number of topics in each homework assignment will vary, based on each student's individual learning path within ALEKS. In the whole semester, there are 300 topics, each worth ½ of a point. You will earn 0.5 points for each topic in your pie (whether mastered or learned) on the last day of classes (Full Pie).

Chapter quizzes. There are 13 weekly quizzes, each worth 30 points. Each quiz will cover that week's course content and will have 10-20 questions. There are no retakes for chapter quizzes.

Final Exam. You must take the Final Exam in order to earn a letter grade other than F in the course. There are 130 possible points, and no retakes are possible. The Final Exam will be cumulative and will cover all material presented in the course.

For more information, please see policy.umn.edu/education/gradingtranscripts.

Grading Policies

S/N grading. If you are registered for this class on an S/N basis, a grade equivalent to C- or above on the A-F scale will be required to earn an S, and a grade equivalent to D+ or below will earn an N. Many programs and transfer courses do not like S/N grading and will assume it represents the minimum possible grade. Monday, January 31, is the last day to change the grading basis from A-F to S/N.

Incompletes. Students who have an excused absence from the Final Exam *and* have taken all chapter quizzes may be eligible to earn a grade of I in the course. Incompletes will *not* be granted if the student is not passing based on the work up to the Final Exam. This grade is NOT routinely assigned. Any grade of I must be made up the following semester. After that time, all grades of I will become grades of F. You must fill out an Incomplete Request form (available from our student services staff) and have it signed. See your instructor for details.

Is there extra credit?

There is no extra credit in CHEM 1061.

Withdrawals. If you decide to drop the class, you must officially withdraw from the course following the specific rules of your college. Please know that students withdrawing from the course will not have any records retained for use upon retaking the course. If you are considering withdrawing from the course for academic reasons, I urge you to come and talk with me during office hours. Your situation may not be as bad as you think it is.

Tutoring

General chemistry tutor room. General chemistry tutors are available for free on a drop-in basis during the semester via Zoom (the schedule is posted on our course Canvas page). The tutors are there to help you learn and not to simply give you answers. The tutors are actually instructed to ask *you* questions that will help you understand what concept you are missing that is preventing you from solving a particular problem. Solving the problem yourself with a tutor's guidance will enhance the depth and retention of your knowledge.

It is important to me that your time is well spent in the tutor room. If tutors are not present at scheduled times, are not helpful, or if they leave for extended periods of time, please let the Head General Chemistry TA (genchem@umn.edu) or me know immediately.

Private tutors. A list of people available for hire as private tutors is available on our course Canvas site, if this is something you're interested in.

Course Policies

Appropriate student use of class notes and course material

Lecture videos in our course will be used for educational purposes only for the students enrolled in our class this term. Similarly, taking notes is a means of recording information and personally absorbing and integrating the educational experience.

Students must receive explicit instructor permission in order to share lecture videos, course content, quizzes, lecture materials, etc.

Disseminating class notes and materials (including exams, lecture videos, practice exams, worksheets, handouts, etc.) beyond the classroom community and/or accepting compensation for taking and/or distributing class notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning.

Sexual harassment

“Sexual harassment” means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual’s work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult the Board of Regents policy:

<http://regents.umn.edu/sites/regents.umn.edu/files/policies/SexHarassment.pdf>.

Late registration

Please be advised that joining the course after the start of classes does not excuse you from attendance and/or any work collected and/or graded. You should give careful consideration to this prior to late addition (after the first day of classes) to our course.

Use of personal electronic devices in the classroom

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. For complete information, please reference <http://policy.umn.edu/Policies/Education/Education/STUDENTRESP.html>.

Mental health and stress management

As a student, you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health website: <http://www.mentalhealth.umn.edu>.

Many international students and scholars experience difficulty during their stay in the US, and International Student and Scholar Services (www.iss.umn.edu) office is available to help.

Student workload expectations per undergraduate credits

For fall and spring semester, one credit represents, for the average University undergraduate student, three hours of academic work per week, averaged over the term, in order to complete the work of the course to achieve an average grade. One credit equals 42-45 hours of work over the course of the term (1 credit x 3 hours of work per week x 14 or 15 weeks in a semester = 42 to 45 hours of academic work. Thus, enrollment for 15 credits in a term represents approximately 45 hours of work per week, on average, over the course of the term.

Overlapping and back-to-back courses

Enrolling in overlapping or back-to-back courses that do not allow enough travel time to arrive at class meetings (including exams) on time is prohibited. For more information, see <http://policy.umn.edu/education/overlappingclasses>.

Student conduct code

As a student at the University you are expected adhere to Board of Regents Policy: *Student Conduct Code*. To review the Student Conduct Code, please see: http://regents.umn.edu/sites/default/files/policies/Student_Conduct_Code.pdf.

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."

Equity, diversity, equal opportunity, and affirmative action

The Department of Chemistry is united in the belief that diversity in all of its forms is good. Collaboration among people of all cultures and backgrounds enhances our experience as scientists and contributes to excellence in teaching, learning, and research. We strive to promote a climate that celebrates our differences and strengthens our department by embracing and working to increase our diversity.

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/default/files/policies/Equity_Diversity_EO_AA.pdf.

Scholastic dishonesty

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. Please see the Student Conduct Code (http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf) for more information. If it is determined that a student has cheated, he or she may be given an "F" or an "N" for the course and may face additional sanctions from the University. For additional information, please see: <http://policy.umn.edu/education/instructorresp>.

The Office for Community Standards has compiled a useful list of FAQs pertaining to scholastic dishonesty: <https://communitystandards.umn.edu/avoid-violations/avoiding-scholastic-dishonesty>.

Academic freedom and responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.*

Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help: your instructor, the department chair, your academic advisor, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost. See the Board of Regents policy for further information: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Academic_Freedom.pdf.

* Language adapted from the American Association of University Professors "Joint Statement on Rights and Freedoms of Students".

Disability accommodations

The University of Minnesota views disability as an important aspect of diversity and is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is the campus office that collaborates with students who have disabilities to provide and/or arrange reasonable accommodations.

If you have, or think you may have, a disability (e.g., mental health, attention, learning, chronic health, sensory, or physical), please contact DRC at (612) 626-1333 to arrange a confidential discussion regarding equitable access and reasonable accommodations.

If you are registered with Disability Resource Center and have a current letter requesting reasonable accommodations, please contact your instructor as early in the semester as possible to discuss how the accommodations will be applied in the course.

For more information, please see the DRC website, <https://diversity.umn.edu/disability/>.

Issues with your instructor

On occasion you may have a concern or problem regarding this course. You will find your instructor quite willing to discuss this with you. If, however, you wish to discuss it with someone other than your instructor, please contact Prof. Michelle Driessen, Director of General Chemistry, at mdd@umn.edu. She will serve as a mediator in helping to resolve the issue.

COVID-19

As of the writing of this syllabus, the University of Minnesota requires all students, staff, and faculty to wear masks when indoors, regardless of vaccination status, and strongly encourages members of the campus community to get vaccinated. Resources are available for accessing vaccines.

Please stay at home if you experience symptoms of COVID-19 and consult with your healthcare provider about an appropriate course of action. An absence from a quiz due to symptoms of COVID-19 is eligible for an excused absence.

People who are not vaccinated are at high risk for getting and spreading SARS-CoV-2, the virus that causes COVID-19. New variants of the virus spread more easily and quickly, particularly among young adults, which may lead to more cases of COVID-19 among college students this semester. An increase in the number of COVID-19 cases will strain healthcare resources and lead to more hospitalizations and potentially deaths.

The best defenses against contracting COVID-19 and spreading the virus to others are vaccination and masking. All members of the University community who can be vaccinated are strongly encouraged to get vaccinated. Visit <https://safe-campus.umn.edu/return-campus/get-the-vax> for resources on how to get vaccinated.

When indoors, you are currently required to wear a face covering (mask) to protect the entire community of students, faculty members, and staff. This will maintain a culture of safety to help protect all members of the community, and especially those who are immunocompromised and/or who are caretakers of others (e.g., young children), including those who cannot yet be vaccinated. Visit <https://safe-campus.umn.edu/return-campus/face-coverings> for more information.

If you experience COVID-19 symptoms or symptoms of any potentially infectious respiratory illness (e.g., fever or chills, cough, shortness of breath or difficulty breathing, new loss of taste or smell, sore throat, congestion or runny nose), you should stay home or in your residence hall room and not come to class. Please consult with your healthcare provider about an appropriate course of action, and please consult the M-test program for COVID testing resources.

Note that pandemic guidelines update regularly in response to guidance from health professionals and the prevalence of the virus in our community. You will be notified of any changes at <https://safe-campus.umn.edu/return-campus/covid-19-updates>.

Class Schedule and Practice Problems

Homework and Quizzes are due by 12 pm noon Central.

Chapter 1

Keys to the Study of Chemistry

6, 24, 27, 30, 34, 40, 48, 50, 54-56, 66, 73, 76, 79, 90

Chapter 2

The Components of Matter

3, 4, 20, 24, 28, 40, 42, 44, 48, 50, 57, 71, 73, 75, 85, 87, 89, 91, 97, 99, 103, 105, 107, 111, 116, 125, 126, 129, 133, 138

Chapter 3

Stoichiometry of Formulas and Equations

8, 10, 12, 14, 16, 20, 25, 27, 30, 36, 40, 42, 46, 51, 56, 58, 62, 69, 71, 77, 85, 87, 89, 100, 107, 109, 114, 122, 124, 135, 143

Chapter 4

Three Major Classes of Chemical Reactions

5, 18, 24, 28, 30, 34, 37, 41, 45, 47, 49, 53, 56, 65, 69, 74, 77, 84, 88, 92, 96, 105, 107, 109, 115, 117, 132, 136, 139, 147, 163, 156

Homework A: Due by January 20

PR – Measurements and Components Quiz: January 21

Homework B: Due by January 27

PR – Stoichiometry and Reactions Quiz: January 28

Chapter 5

Gases and the Kinetic-Molecular Theory

8, 19, 21, 24, 26, 28, 30, 32, 33, 36, 39, 44, 45, 49, 51, 55, 60, 75, 77, 79, 81, 92, 95, 97, 100, 104, 129, 142, 145, 150, 157

Homework C: Due by February 3

Chapter 5 Quiz: February 4

Chapter 6 – Calorimetry

Thermochemistry: Energy Flow and Chemical Change

37, 40, 45, 47, 51, 53, 107

Homework D: Due by February 10

Chapter 6 – Calorimetry Quiz: February 11

Chapter 6 – Enthalpy

Thermochemistry: Energy Flow and Chemical Change

20, 21, 24, 25, 27, 29, 59, 63, 69, 70, 74, 76, 81, 82, 84, 87, 90, 96, 103

Homework E: Due by February 17

Chapter 6 – Enthalpy Quiz: February 18

Chapter 7

Quantum Theory and Atomic Structure

2, 7, 9, 14, 20, 29, 31, 39, 41, 48, 49, 51, 55, 57, 64, 68, 73, 74, 81, 94

Homework F: Due by February 24

Chapter 7 Quiz: February 25

Chapter 8

Electron Configuration and Chemical Periodicity

13, 21, 25, 29, 33, 37, 41, 44, 48, 53, 55, 58, 60, 71, 73, 77, 81, 83, 87, 89, 98, 101

Homework G: Due by March 3

Chapter 8 Quiz: March 4

Chapter 9

Models of Chemical Bonding

8, 24, 26, 30, 33, 39, 47, 50, 58, 60, 64, 66, 68, 81, 86

Homework H: Due by March 17

Chapter 9 Quiz: March 18

Chapter 10 – Lewis Structures

The Shapes of Molecules

7, 11, 15, 19, 62, 81

Homework I: Due by March 24

Chapter 10 – Lewis Structures Quiz: March 25

Chapter 10 – VSEPR

The Shapes of Molecules

33, 34, 36, 40, 44, 46, 50, 55, 57, 66, 74, 92

Homework J: Due by March 31

Chapter 10 – VSEPR Quiz: April 1

Chapter 11

Theories of Covalent Bonding

1, 7, 9, 13, 15, 17, 21, 23, 38, 41, 42, 44, 47, 50

Homework K: Due by April 7

Chapters 11 & 15 Quiz: April 8

Chapter 15

Organic Chemistry

19, 21, 57, 59, 61

Chapter 12

Intermolecular Forces

7, 15, 19, 23, 28, 33, 41, 49, 51, 54, 63, 70, 142

Homework L: Due by April 14

Chapter 12 Quiz: April 15

Chapter 13

Solutions and Colloids

9, 13, 21, 30, 32, 36, 44, 46, 56, 58, 64, 66, 70, 72, 74, 76, 82, 88, 90, 92, 94, 98, 104, 106, 110, 125, 128, 131, 135, 139, 146, 149, 160, 161, 165

Homework M: Due by April 21

Chapter 13 Quiz: April 22

Review for Final Exam

ALEKS Full Pie: Due by 11:59 pm Central on May 2

Final Exam: May 9