

CHEM 1061

Chemistry Principles I
Sections 003, 004 & 005

Syllabus
Fall 2025

Course Meeting Information

Section 003 – Smith Hall 100, Tuesdays & Thursdays 9:45-11AM

Section 004 – Bruininks Hall 114, Tuesdays 1-2:15PM

Section 005 – Bruininks Hall 114, Thursdays 1-2:15PM

Instructor information

Dr. Michelle Driessen
mdd@umn.edu

237 Smith Hall
624-0062

Student/Office Hours will be held on Mondays from 1:30-2:30PM, Wednesdays from 10-11AM, and Thursdays 11:30AM-12:30PM via Zoom. Access Zoom links in the class Canvas site. Appointments are also encouraged if office hours do not fit your schedule.

Course information

Course Description

CHEM 1061 is the first part of a chemistry sequence called “general chemistry”. We will be using a curriculum called *Chemistry, Life, the Universe and Everything (CLUE)*. The curriculum is designed to help you to learn the fundamental concepts of chemistry. Starting with atomic structure, we will use the ideas of force and energy to look at elements and states of matter. Stoichiometry will allow us to convert between the macroscopic and molecular levels. Light will provide us with evidence of electronic structure, which explains periodic trends. We will model elements and compounds, predict their properties, and explain how they participate in bonding and interactions. Finally, we will tie what we’ve learned back to energy through temperature and enthalpy. While the approach we use in class may be somewhat different from what you are used to, we have evidence that you will finish this course with a deep understanding of chemistry principles and that you will be able to use this knowledge in subsequent courses.

Course Prerequisites

To register/remain registered in this course, you must meet the following criteria:

- Registration in BOTH 1061 & 1065 during the same semester is required.
- Earned math placement into MATH 1151 OR
- Completed MATH 1031/1051 with a grade of C- or better

If you do not meet these criteria, you should report your situation to the staff in Smith 115 at 612-624-0026 or chemfaq@umn.edu immediately. They handle all registration issues pertaining to this course.

Course Philosophy

In a traditional classroom the flow of information is typically from the instructor to students in the form of a lecture. While this is a very efficient way to deliver simple information and learn skills (such as numerical problem solving and material to be memorized), it is not a very effective way for students to learn complex subjects like chemistry. In order to learn something, it is important to think about the concepts you are learning, understand their implications, and, when faced with a new problem, be explicitly aware of your assumptions and clarify (for yourself and others) your understanding.

The approach we will take in this class is to ask you lots of questions and, based on your answers, we will provide feedback, more questions – and some answers! While it may seem easier to just tell you what we want you to know and how to solve problems, studies have found that this approach is not very effective at promoting learning. The goal of this class is to help you become a **self-directed learner**, and to teach you skills that will help you for the rest of your life. Learning how to learn (and how to think) is difficult, and it is understandable if you come to feel a bit overwhelmed initially. It is completely normal to not immediately understand many of the ideas that you will encounter in chemistry. But be patient – you will learn more, in greater depth, than you would in a traditional lecture format.

If you do all the assigned work on schedule and keep up with the material, you will find this course to be interesting and rewarding. If not, you will find that the course quickly becomes incomprehensible. You must keep up! It is impossible to recover once you fall behind. ***The work in this course is university-level: it is not enough to recall facts and definitions and solve simple problems.*** The goal of this course is for you to understand chemical processes on the molecular level - to do this you will need to understand chemical concepts and be able to solve complex problems involving several steps.

A word about the instructor and the learning assistants

Our role this semester will be to help you learn and understand the concepts and materials in the course. There will be many different methods to accomplish this, almost all of which will require you to become an active participant. A typical class period will consist of very short lectures, polling questions, and time to work with your classmates in groups to solve problems. Learning assistants (LAs) and the instructor will be actively circulating during class - please let us know what questions you have as you're working on the material! - but our role is to help facilitate your learning, *not* to give you the correct answer or confirm that your answer is correct. We will always do our best to help you, but ***what you get from this course depends on you.***

Liberal Arts Statement

Chemistry 1061/1065 and 1062/1066 are introductory chemistry courses, each accompanied by a lab course. The two courses, with labs, together are 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. A student may ask, "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 will develop these skills and prepare you to be an informed citizen and life-long learner.

Course Materials

Required Textbooks & Materials

- Internet-capable tablet or laptop for course work
- Access to an internet-capable laptop or desktop computer (with working webcam and microphone) to access our exam system for mastery checkpoints.
- Portable whiteboard (around 10 x 12") for use in our e-proctoring system (details in Canvas)
- Dry erase marker for use during mastery checkpoints
- CLUE Text is a free, open-access work that is posted in our class Canvas site
- Stemble (online homework access). Note that the Stemble package is included with CourseWorks. Access is instantaneous through our class Canvas site. More detailed information is available at the bookstore's website (<https://courseworks.umn.edu/>) on access and how this material is charged.
- Scientific calculator for in-class work.* There is a built-in scientific calculator in our exam interface for use during mastery checkpoints. No other calculator is allowed during mastery checkpoints.

*Note that there are free online scientific calculators that can be used during class time and when completing homework.

The presence or use of any outside calculator is FORBIDDEN on exams. Their presence or use during an exam will be considered academic dishonesty and will be reported to the Office of Community Standards.

Course Objectives & Learning Outcomes

Semester Topic Outline

- Chapter 1: Atoms
- Chapter 2: Electrons and Orbitals
- Chapter 3: Elements, Bonding and Physical Properties
- Chapter 4: Heterogeneous Compounds
- Chapter 5: Systems Thinking

Student Learning Outcomes

- Identify, define, and solve problems
- Master a body of knowledge and mode of inquiry
- Acquire skills for effective citizenship and life-long learning

See the course Canvas site for a detailed list of learning objectives and key skills for each chapter.

Learning, Assessment & Grading

I am here to support your learning in any way possible, keeping in mind that learning is personal and will look different for each student. Successful completion of the course will require you to actively engage with all of the activities, and keep up with the pace of our course. If you skip any portion of the work, you will fall behind quickly and won't likely be able to catch up.

You are expected to fully engage with course activities and complete all work **individually**. It is understood that you may not fully understand the course material as you are first learning it. Therefore, you will not be penalized for incorrect answers in the lecture videos, worksheets, or alphabetical homework. You simply must complete these as a reasonable best attempt to earn full credit. No partial credit is offered.

Lecture & Recap Videos

You must watch the videos AND answer the embedded questions by the designated due date – these come BEFORE the class meeting where we will work on these concepts. Even though you may answer the questions incorrectly along the way (you are just learning!) you **MUST** answer the final question at the end of the video AND click “submit” to earn credit. This is the only way Canvas will record your work.

Your videos will be graded for completion by the deadline(s). Example: If there are 10 videos, and you view, answer questions, and submit 7 of them by their deadlines, you would earn 70% for this category.

In-Class Activities/Worksheets

Each class meeting is your opportunity to work with peers, your instructor, and the learning assistants to apply and practice what you are learning outside of class time. You must be present for the entire class meeting, actively engage with your peers and the activities, AND upload your work to Canvas at the end of class to earn credit. Again, your answers don't have to be correct to earn credit but must represent a full and honest attempt at the work. These will not earn partial credit.

Your worksheets will be graded for completion by the deadline(s). Example: If there are 10 worksheets and you complete and submit 8 of them by their deadlines, you would earn 80% for the worksheet category.

How to engage with this activity:

- Print out a paper copy before class, “write on” a digital copy on your personal device, or write on notebook paper.
- Complete worksheet during class while working with your group/table.
- Save your digital document OR take a photo (CamScanner is a good app) of each question of your paper worksheet and type/upload answers to each question in the Stemble worksheet assignments.

Alphabetical Homework

The alphabetical (HW A – HW V) homework is where you will sometimes be asked to think about upcoming material, or perhaps to apply something you've practiced recently in class. Give each question your best attempt, but don't worry about being perfect. These will not earn partial credit.

Your Canvas homework score will be graded for completion by the deadline. Example: If there are 10 Canvas homework sets, and you answer all questions, and submit 9 of them by their deadlines, you would earn 90% for the Canvas homework category.

Note that the instructor and graders will periodically check your submitted work for both the worksheets and Canvas homework to confirm you are fully engaging with the material. If not, you will not earn credit for these items.

Weekly Homework

Weekly homework is where you will practice some of the basic skills and concepts in the course. Details on accessing and setting up your Stemble account can be found in the invitation emails you receive at the start of the semester. Completing this work on time and accurately (100%) will give you a basic foundation of most course concepts. Your weekly homework score will be graded for accurate completion by the deadline.

Mastery Checkpoints

Mastery checkpoints are where you get to show all that you have learned for each unit/chapter of material. You will be expected to put together complex ideas and explain chemical phenomena using ideas that are explored in all of the other course activities. These will be administered in Canvas using Proctorio (a proctoring system). Note the dates and protocols for these, described below.

Grades

Your final course percentage will be based on the weighted average of your scores in each of 5 categories, according to the following breakdown.

Videos – 12.5% (completion/honest attempt)

Alphabetical Homework – 12.5% (completion/honest attempt)

In-Class Work/Worksheet Participation – 12.5% (completion/honest attempt)

Weekly Homework – 12.5% (accurate completion by the deadline)

Mastery Checkpoints – 50%

Your current standing in the course, along with letter grade is always shown in the Canvas grade book. Your course percentage will determine your final course letter grade using this scale. There will be no extra credit, rounding or “bumping” of a score at the end of the semester.

A:	93.0-100.0%
A-:	90.0-92.9%
B+:	87.0-89.9%
B:	83.0-86.9%
B-:	80.0-82.9%
C+:	77.0-79.9%
C:	73.0-76.9%
C-:	70.0-72.9%
D:	60.0-69.9%
F:	< 60.0%

Another way to look at your grade is on a total points scale. Think of our course as having 100 total points for the semester – 12.5 pts for each category except mastery checkpoints which are worth 50 pts total.

At any given point in the semester, Canvas will show you your percentage in each of these grade categories. Let's say you have 100% in Worksheets, 91.1% in Alphabet HW, 85.5% in Videos, 98.0% in Weekly HW, and 58.1% in Mastery Checkpoints. You would calculate your grade in the following fashion:

$$(1.00 \times 12.5 \text{ pts}) + (0.911 \times 12.5 \text{ pts}) + (0.855 \times 12.5 \text{ pts}) + (0.980 \times 12.5 \text{ pts}) + (0.581 \times 50.0 \text{ pts}) = 75.9 \text{ pts or } 75.9\% \text{ of our course points – a "C" grade from the ranges given above.}$$

University grading policies and guidelines can be found at: <https://policy.umn.edu/education/gradingtranscripts>

Mastery Checkpoints

There will be seven mastery checkpoints, all proctored electronically using Honorlock (see details in our Canvas site). The final will be comprehensive and cover all course material. No mastery checkpoint, including the final, may be taken on a day other than that which has been scheduled (see calendar below). If you have conflicts with any of the scheduled times, you should resolve them now or drop the course. The *only* exception is if you are registered in another UM course that conflicts with the exam time. If you have a course conflict of this type, see me on or before Friday, September 5th.

Mastery Checkpoint Format

You must have your laptop, student I.D., whiteboard, and dry erase marker at each of the mastery checkpoints (dates shown in calendar below and in Canvas). They will be available for 24 hours, from Thursday at 4PM until Friday at 4PM, with the exception of the final which is aligned with the U final exam schedule – see calendar below. Once started, each mastery checkpoint must be completed within one sitting, though there is no time limit. You may not leave the camera view once you begin.

All mastery checkpoints for this course will consist of ~15 questions of varying formats, including multiple-choice, short answer, ranking, matching, and explain/essay. The mastery checkpoints will be proctored and predominantly graded by computer. The essay questions will be graded by a TA or your instructor. You are to use all formulas and constants provided within the provided mastery checkpoint materials to ensure credit. *Make sure you understand fully how to set up your computer and prepare for e-proctoring in advance of the actual mastery checkpoints. Details are provided in the class Canvas site.*

Mastery Checkpoint Behavior/Protocols

Please note that your full face must be on screen/camera at all times for the duration of your mastery checkpoint. If your face is not viewable, your score will not be accepted.

Items NOT allowed anywhere near the testing area during a mastery checkpoint:

- any device (cell phone, iPad/tablet, smartwatch) other than the laptop on which you are testing
- hats of any kind
- ear phones/ear buds
- anything that obscures your face from the camera
- scratch paper
- physical calculators of any type

You must follow all protocols called out here and in the instructions at the beginning of your mastery checkpoint to ensure credit for your work.

Missed Mastery Checkpoints

In the case of a true emergency, serious illness, or University-related trip that prevents a student from taking a mastery checkpoint, an **excused absence may be granted** in strict accordance with University policy (see link below). To obtain an excused absence, students must contact the instructor in advance OR as soon as circumstances allow to discuss the nature of the emergency. Documentation will be required. The unweighted average score of all the student's other mastery checkpoints will replace the zero from the excused checkpoint. Only one missed checkpoint will be replaced in this fashion and it does not apply to the final. If circumstances prevent a student from taking more than one mastery checkpoint, a meeting must be scheduled immediately with the instructor to discuss any options available.

<https://policy.umn.edu/education/makeupwork>

For information on missing the final mastery checkpoint, see "Incompletes".

Other Grade Issues

Late Registration

Please be advised that joining the course after the start of classes does allow for extended deadlines nor excuse you from any work collected and/or graded. You should give careful consideration to this prior to late addition of our course.

Regrades

Request a regrade (in writing directly to the instructor via e-mail) by the end of the week following the posting of results. It is possible (but very unusual) for errors to be made. You are responsible for making sure you have correctly recorded your choice of answer in the correct areas.

S/N Grading

If you are registered for this course on an S/N basis, a grade equivalent to C- on the A-F scale will be required to receive an "S". A D+ or below will receive an "N". Many programs or transfer courses do not like, or will not accept, S/N grades or will assume that they are the minimum possible grade. **Requests to change grading basis after the University deadline will not be approved.**

Incompletes

Students who have an excused absence from the Final Mastery Checkpoint, and have taken all others, may be eligible to receive a grade of "I" in the course. Incompletes will not be granted if a student has missed earlier mastery checkpoints, or is not passing based on the work up to the final. You need to fill out an incomplete request form and have it signed. See me for details. This grade is NOT routinely assigned! Any incomplete must be made up in the following semester. After that time all incompletes turn into F grades.

Withdrawals

If you are considering withdrawing from the class for academic reasons, I urge you to speak with me. Your situation may not be as bad as you think it is. If you do decide to drop the class, you should officially

withdraw from the course following the rules for your college and know that students withdrawing from the course will not have any records retained for use upon re-taking the class.

Please note that if you drop lecture (1061) you must also drop lab (1065) unless you do so on or after November 3, 2025.

Help

Instructor

Asking questions during office hours is a first line of defense toward overcoming conceptual problems with the course material. Get help early on so that problems do not compound! I hope to see you and assist with any difficulties you're experiencing.

Learning Assistant Hours

Learning assistants for 1061 will be available throughout the week to help with questions you might have about the material. See the LA Hours link on Canvas for the schedule and additional details.

Free Tutoring

Room 140 Fraser Hall is the site of regular Chem 1061 drop-in tutorial sessions conducted by general chemistry TAs. See the TA web link for additional details and some Zoom hours.

<https://sites.google.com/umn.edu/general-chemistry/chemistry-department-tutors>

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 Dr. Angela Perkins, the Chemistry Department Director of Undergraduate Studies. Her e-mail address is aperkins@umn.edu. She will serve as a mediator in helping to resolve the issue.

Policy Statements

Online Assignment Help Tools

Artificial intelligence (AI) language models, such as ChatGPT, and online assignment help tools, such as Chegg®, are examples of online learning support platforms: they can not be used for course assignments except as explicitly authorized by the instructor. The following actions are prohibited in this course:

- Submitting all or any part of an assignment statement to an online learning support platform;
- Incorporating any part of an AI generated response in an assignment;
- Using AI to brainstorm, formulate arguments, or template ideas for assignments;
- Using AI to summarize or contextualize source materials;
- Submitting your own work for this class to an online learning support platform (other than Stemble) for iteration or improvement.

If you are in doubt as to whether you are using an online learning support platform appropriately in this course, I encourage you to discuss your situation with me.

Overlapping & Back-to-Back Courses

Enrolling in overlapping or back-to-back courses that does not allow enough travel time to arrive at our class meetings on time is prohibited. For more information, please see:

<https://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:

https://regents.umn.edu/sites/regents.umn.edu/files/2022-07/policy_student_conduct_code.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. (Student Conduct Code:

<https://policy.umn.edu/education/studentconductcode-proc01>) 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.

Beware of websites (such as Chegg) that advertise themselves as “tutoring sites”. It is not permissible to upload any instructor materials (such as videos, worksheets, hw assignments, exam questions) to these sites without their written permission. In addition, using these sites to complete homework or answer exam questions is considered academic dishonesty and will result in an F for the course.

The Office for Community Standards has compiled a useful list of ways to avoid scholastic dishonesty: <https://communitystandards.umn.edu/student-resources/avoiding-scholastic-dishonesty>. If you have additional questions, please clarify with your instructor for the course. Your instructor can respond to your specific questions regarding what would constitute scholastic dishonesty in the context of a particular class-e.g., whether collaboration on assignments is permitted, requirements and methods for citing sources, if electronic aids are permitted or prohibited during an exam.

Student 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 or reduce a student's ability to participate in daily activities. University of Minnesota services are available to assist you with addressing these and other concerns you may be experiencing. You can learn more about the broad range of confidential mental health services available on campus via <https://safe-campus.umn.edu/personal-wellbeing#mental-health>.

Teaching & Learning

The materials provided in this course are intended only for the students officially enrolled in this section and are to be used to learn and practice the course material. Disseminating class notes, videos, exams, etc... beyond the classroom community or accepting compensation (in the form of cash or in trade, such

as access to a study website) undermines instructor interests in their intellectual property while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community and are not allowed. For additional information, please see: <https://policy.umn.edu/education/studentresp>

Sexual Harassment

The University policy on sexual harassment can be found at: <https://policy.umn.edu/policy-regents/1069>

Equity, Diversity, and Equal Opportunity

We welcome to this course individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability, and other visible and invisible differences. Instructors, teaching assistants, and students are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. This is in agreement with university policy:

http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf

For information on the Diversity and Inclusion Committee in the Chemistry Department, see:

<https://sites.google.com/umn.edu/chemintranet/diversity-inclusion>

Collaboration among people of all cultures and backgrounds enhances our experiences and contributes to excellence in teaching, learning, and research. We strive for a climate that celebrates our differences and strengthens our department by embracing and working to increase diversity, equity, and inclusion.

For the Gender and Sexuality Center for Queer and Trans Life, see: <https://gsc.umn.edu/>

For gender-neutral restrooms in Smith and Kolthoff Halls and elsewhere on campus, see: <https://sites.google.com/umn.edu/chemintranet/accessible-gender-neutral-restrooms>

Disability Resource Center

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 in any area such as mental health, attention, learning, chronic health, sensory, or physical, please contact the DRC (612.626.1333, <https://disability.umn.edu>) to arrange a confidential discussion regarding equitable access and reasonable accommodations. Students with short-term disabilities, such as a broken arm, can often work with instructors to minimize classroom barriers. In situations where additional assistance is needed, students should contact the DRC.

If you are registered with the DRC and have a disability accommodation letter dated for this semester or year, please contact me as early in the semester as possible to review how the accommodations will be applied in the course.

Class Schedule*

September

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1	2	3	4	5	6
		Syllabus, Chpt 1	Chpt 1	Chpt 1		
7	8	9	10	11	12	13
Weekly HW Chpt 1.1	Chpt 1	Chpt 1	Chpt 1	Chpt 1		
14	15	16	17	18	19	20
Weekly HW Chpt 1.2	Chpt 1	Chpt 1	Chpt 1	Chpt 1	Mastery Checkpoint 0	
21	22	23	24	25	26	27
Weekly HW Chpt 1.3	Chpt 2	Chpt 2	Chpt 2	Chpt 2	Mastery Checkpoint 1	

October

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
28	29	30	1	2	3	4
Weekly HW Chpt 2.1	Chpt 2	Chpt 2	Chpt 2	Chpt 2	Chpt 2	
5	6	7	8	9	10	11
Weekly HW Chpt 2.2	Chpt 3	Chpt 3	Chpt 3	Chpt 3	Mastery Checkpoint 2	
12	13	14	15	16	17	18
Weekly HW Chpt 3.1	Chpt 3	Chpt 3	Chpt 3 HW G	Chpt 3	Chpt 3	
19	20	21	22	23	24	25
Weekly HW Chpt 3.2	Chpt 4	Chpt 4	Chpt 4 HW H	Chpt 4	Mastery Checkpoint 3	
26	27	28	29	30	31	1
Weekly HW Chpt 4.1	Chpt 4	Chpt 4	Chpt 4	Chpt 4	Chpt 4	

November

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
2 Weekly HW Chpt 4.2	3 Chpt 4	4 Chpt 4	5 Chpt 4	6 Chpt 4	7 Chpt 4	8
9 Weekly HW Chpt 4.3	10 Chpt 5	11 Chpt 5	12 Chpt 5	13 Chpt 5	14 Mastery Checkpoint 4	15
16 Weekly HW Chpt 5.1	17 Chpt 5	18 Chpt 5	19 Chpt 5	20 Chpt 5	21	22
23 Weekly HW Chpt 5.2	24	25 HOLIDAY (no class)	26	27 HOLIDAY (no class)	28	29

December

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
30	1 Review	2 Review	3 Review	4 Review	5 Mastery Checkpoint 5	6
7	8	9 NO CLASS	10 Last Day of Instruction	11	12	13
14	15 FINAL MCP START - 3:30PM	16 FINAL MCP END - 3:30PM	17	18	19	20

*This schedule only shows mastery checkpoints, weekly homework, and general content coverage. See the class Canvas and Stemble site under "Course Content" to see detailed weekly lists of required readings, videos, worksheets and homework assignments.