

**Chemistry 1081, Section 001**  
**Chemistry for the Life Sciences I**  
**Fall 2023**

**Instructor:** Dr. Angela Perkins (she/her)

**Office:** 425 Smith Hall

**Email:** [aperkins@umn.edu](mailto:aperkins@umn.edu) (best way to contact me)

**General Course Information:** Chemistry 1081 (3-credits) with accompanying 1065 (1-credit) lab is the first semester in a three-semester sequence of courses designed to provide a strong chemistry background for students pursuing degrees and careers in the life sciences. Upon completion of these courses, the desired outcome is that the student (1) can identify, define and solve problems; (2) can locate and critically evaluate information; (3) has mastered a body of knowledge and a mode of inquiry; (4) can communicate effectively; and (5) has acquired the skills for effective and life-long learning.

**Liberal Education:** This lecture/lab pair fulfills the core physical science requirement of the liberal education requirement. A student may ask, "Why is this course considered an important component to my liberal education?" A liberal educated person is one who can understand complex issues, find credible information, analyze that information, problem-solve, and draw reasonable conclusions based on facts. In this course, these objectives are met, in part, by highlighting the experimental basis for physical theories and understanding how chemical knowledge can contribute to solving some of society's preeminent challenges. For example, kinetic molecular theory can be tested via experimental methods, including the measurement of pressure, volume, and temperature. The hydrogen atom emission spectrum will be used to test predictions made by atomic theory. Moreover, in the co-requisite laboratory course, open-ended experiments provide you the opportunity to practice the scientific method yourself, as you will formulate, test, and refine hypotheses pertinent to the problems you are studying. This course along with the 1065 laboratory will help to develop these skills and to prepare you to be an informed citizen and life-long learner.

**Website:** All class information will be posted on the course website - access through [canvas.umn.edu](https://canvas.umn.edu)

**Office Hours:** See Canvas Site as dates/times will be set after the first week of the semester. If the scheduled office hours don't work for you or you want to be sure to chat one-on-one, please email to set up an appointment.

**Course Materials:** *All course materials are available for purchase from the UMN Bookstores (Coffman Union and St. Paul Student Center).*

- **Textbook:** *Interactive General Chemistry: Atoms First*, Jessica White, Brian Anderson, Brandon Green and Mildred Hall, 2019, Macmillan Publishing
- **Online Homework:** Achieve. The e-book and online homework are offered together through inclusive access from the UMN bookstore. You will have access to both the e-book and online materials before the first day of classes.
- **iClicker Access:** You will either need an internet capable device (computer, tablet or phone) or you can purchase a remote from the bookstore.
- **Computer:** You will need access to a computer with internet capabilities and a working microphone and webcam.
- **For Quizzes and the Final Exam:**
  - A whiteboard or other laminated surface along with a dry erase marker
  - A mirror or other highly reflective surface (~6"x6").
  - Non-programmable scientific calculator (see below for specifics)

**Prerequisite Material:** To register/remain registered in this course, you must meet all of the following criteria:

1. Registration in both 1081 (lecture) and 1065 (lab) during the same semester is required
2. Passed the chemistry placement exam (and been advised to take this course) or Completed CHEM 1015 or an equivalent course with a grade of a C- or better

If you do not meet these criteria, you should report your situation to the support staff in Smith 115 (624-0026) immediately. They handle all registration issues pertaining to this course.

#### How to do well in this course:

- **Be prepared for lecture.** Briefly scan the material that is going to be covered in the lectures before coming to class. It helps to have a basic knowledge of what is being discussed. This can help you tailor questions for material you don't understand.
- **Participate in Class.** Ask questions if there is something that you don't understand.
- **Study the material covered in lecture.** It is helpful to reread your notes while the lecture is still fresh in your mind. If there is something you do not understand, you should ask for help as soon as possible.
- **Work out the assigned problems.** Chemistry can only be mastered by applying concepts learned and the best way to do this is to work problems. Make sure you understand the concepts presented in the chapter and then attempt the problems related to these concepts. The best way to work the problems is without the aid of the solutions manual.
- **Participate in a study group.** Study groups are an effective way of succeeding in this class. Forming a group with 2-3 other students from the class can be a great tool for understanding what you have learned and discover with which concepts you are still struggling, and deepen your knowledge by explaining the material to someone else. Do not go to the study group hoping to learn the material you have not studied, rather complete your studying and take questions to the study group.
- **Get help early.** This class moves very quickly, and we cover a lot of material each week. If you get lost, then don't wait to get help, whether that means going to the tutor room or coming to office hours with questions.

**Tutor Hours:** See link on Canvas site for a detailed schedule for in-person and virtual tutor hours. You will also find the links to access the zoom meeting for virtual tutor hours. These hours are a time to work so please come with direct questions. A reminder that the purpose of a tutor is to help you learn, not simply give you answers to questions or problems. The tutors are instructed, in fact, to ask YOU questions that will help you understand what concept you are missing that is preventing you from solving a particular problem. Self-discovery will enhance the depth and retention of your knowledge.

**Private Tutors:** The department also maintains a list of people who are available for private tutoring. This list can be obtained from 115 Smith Hall during business hours or you can find it on the course website. The cost/hour for a private tutor is negotiated between you (the student) and the tutor.

**Suggested Practice Problems:** For each chapter a series of problems have been chosen from within and at the end of each chapter. These problems can be found on the course website. These problems will be similar in concept and difficulty to the ones that you will see on the exams. These problems **will not be** collected but are to help you understand the concepts and practice the material, so feel free to do as many or few as needed to understand the concepts presented in the chapters and in class. I generally choose a large number of problems because the best way to learn and understand the concepts is to work problems and also because some students appreciate a lot of examples. Again, do as many or as few as you need to understand the concepts.

**Grading:** Your final grades will be calculated based on the 7 quizzes, the final exam, online assignments, and class participation as described below.

<b>Final Grade:</b>	Quiz #1	50
	Quizzes #2-7 (75 pts each; 5 highest scores)	375
	Achieve Homework	130
	Reflection Surveys (4 x 5 points)	20
	Final exam	<u>150</u>
	<b>Total Points possible</b>	<b>725</b>
	<i>iClicker bonus points</i>	up to <u>35</u>

**Grade ranges for this course will be assigned as follows: A: > 92% (> 667 pts); A-: 88–91.9% (638–666 pts); B+: 84–87.9% (609–637 pts); B: 80–83.9% (580–608 pts); B-: 76–79.9% (551–579 pts); C+: 72–75.9% (522–550 pts); C: 68–71.9% (493–521 pts); C-: 64–67.9% (464–492 pts); D+: 60–63.9% (435–463 pts); D: 56–59.9% (406–434 pts).** Historically, using these ranges, about 60% of the class will receive some type of A or B. These grade ranges may be lowered if quiz/exam averages are lower than expected but they will not be raised (go up) if averages are high.

**Quizzes and Exams:** Seven quizzes and one cumulative final exam will be given over the course of the semester. Quiz #1 is a review quiz, that covers the background information that is necessary to be successful in this class. This quiz will be taken during the **first week** of classes. You will take 6 other quizzes covering 1-3 chapters each. Your lowest score of these quizzes (#2-7) will be dropped, and only the highest 5 scores will count towards your final grade. The dates and lecture content for each quiz can be found on the course schedule on Canvas. With the exception of quiz 1 (Friday to Saturday), all quizzes will be opened for a 27-hour period from 1:00 pm (CDT) on Thursday to 4:00 pm (CDT) on Friday. You may log in at any time during this window to complete the quiz, but you must be finished when the window closes. There is no time limit for the quizzes imposed by the instructors (yes, you may take as much time as you need) but Canvas/Proctorio has an 8-hr time limit and the quiz must be completed in one sitting, you cannot leave the view of the webcam.

All quizzes and the final exam will be completed online using Canvas with Proctorio to monitor exam security. Having online quizzes allows you to take your quiz wherever you can find a quiet spot. **To take your quizzes and the final exam this semester you must have an internet connected computer with a working webcam and microphone.** A periodic table and any necessary equations will be provided within the quiz. An erasable Chem white board with periodic table/formula sheet and markers is required to be used for any work as no scratch paper will be allowed. A non-programmable calculator can be used (see guideline for specifics below).

**All quizzes and the final exam will be closed-book and closed-notes and no other study aids are permitted.** You must have your student ID (or other form of photo ID) with you to take the exams.

**All quizzes and the final exam must be taken at the times indicated on the Course Schedule. Absolutely NO late make-up quizzes will be given.** See below on policy for quiz/exam absences.

In the case of a University sponsored activity that will require the student to be out of town, it may be possible to take the exam with the coach, team academic advisor, or another instructor as the proctor. Please see the instructor about such conflicts *as soon as possible* so that arrangements can be made to take the exam early or on the road.

**Calculators:** The presence or use of graphing and/or programmable calculators is FORBIDDEN on exams, this includes the calculator on your cell phone or smart phone. Their presence or use during an exam will be considered cheating. Only non-programmable calculators with limited memory will be allowed for use during exams. The **TI-30Xa** is the suggested calculator for this and all CHEM 1xxx courses, and for most intro Physics courses. The bookstore stocks this calculator for around \$10. The **TI-30X IIS** is an acceptable two-line calculator. Many other two-line calculators are programmable and therefore not allowed. To make it easy for proctors on quiz days, these are the ONLY two calculators that are allowed for exams.

**Achieve Homework:** You will have an online homework assignment due almost every week on **Thursdays at 1:00 pm (CDT)** related to the material that we are covering in class. These assignments will be completed in the Achieve Online Site, registration instructions are given on the course materials page on Canvas.

The Achieve homework is a variety of multiple choice, short answer type questions. Every question in Achieve is weighted approximately the same. You will have an unlimited number of attempts to complete each problem to get it correct, however you will be docked 5% of the points associated with that question for each attempt. Hints are available after the first incorrect answer. The number of Achieve questions will be approximately 360. Every question in the Achieve system accounts for 0.4 pts in the Gradebook, and the maximum number of Homework points is 130

pts. This means that obtaining about a 90% average score in Achieve will be sufficient to reach the maximum 130 points. If you earn over 130 points at the end of the semester, the total number of Achieve homework points used in calculating your final grade will be adjusted to 130 points.

The Achieve homework is roughly organized in the same manner as what you see in the book. It is recommended that you work through problems in Achieve as you go through the material. The expectation is that these problem sets will take you a few hours to complete. It is highly recommended that you start working on them as you are going through lecture material rather than saving all the problems for the end of the assignment period.

Late Homework: While every Achieve homework assignment has a due date posted in Canvas and in Achieve. Assignments can be completed up to 11-days late with no point penalty for late completion. The due dates given are to keep you on track with your homework and to make sure that you are up to date on the material when taking your quizzes. However, your instructor understands that sometimes things happen and extensions on homework are needed. The final due date for any assignment is 11 days (so Monday at 1:30pm) a week-and-a-half later.

**Self-Reflection Surveys (in Achieve):** Over the course of the semester there will be 4 self-reflection surveys. These are due by midnight (at **11:59pm**) according to the schedule below. Completion of each of these surveys is worth 5 points.

- Intro Survey – Sept 7<sup>th</sup> (Thursday)
- Checkpoint #1 – Sept 27<sup>th</sup> (Wednesday)
- Checkpoint #2 – Oct 25<sup>th</sup> (Wednesday)
- Checkpoint #3 – Nov 29<sup>th</sup> (Wednesday)

These surveys ask you to honestly think about your study habits. At the beginning, the Intro Survey asks you to consider your goals for this semester and your plans for managing your time to achieve these goals. The Checkpoint Surveys occur during the semester, after approximately every two quizzes, for you to reflect on what is working and what is not, so that you can think about any changes that you may want to make in your studying.

**iClicker In-class Participation:** During most lectures, we will work problems. You are allowed and encouraged to work with those sitting around you to discuss solutions. Your responses to some of these problems will be monitored using the iClicker system. These iClicker questions will provide you and the instructor with real-time information on the understanding of concepts covered relatively recently in lecture. You will receive credit for participation (0.4 pts per question) during the iClicker in-class problems, as well as for correct answers (additional 0.4 pts per question). The iClicker points are *bonus points* but will be added to your point total and considered in determining your letter grade at the end of the semester. You do not have to participate in these in-class problems to reach 725 points, but in-class participation is known to increase student learning. Over the course of the semester, there will be approximately 50 questions, but you will only be awarded a maximum of 35 *bonus points*.

You must correctly register the device that you will be using to participate in the iClicker questions. You can find information about iClicker registration on the Canvas site. iClicker is part of your Achieve purchase so you will not need to pay separately to use the iClicker system. Please see the Canvas site for instructions on setting up polling and comments about wireless network. It is your responsibility to make sure that you bring your device every day and that it is connected. If for any reason you miss class, you cannot make up iClicker bonus points. You must be present in the lecture room to earn iClicker points! Having someone else submit iClicker responses for you is an act of scholastic dishonesty; there may be a check for student IDs at the end of one or two randomly selected lectures. Additionally, points will not be awarded for forgetting a device, being absent (excused or unexcused), or being on the wrong wireless network.

**Policy on Quiz Absences:** The lowest score of the six quizzes (2-7) will not count toward your point total, i.e., you could also be absent from one quiz without excuse. A student can be excused from one additional quiz for a true emergency, serious illness, or University sponsored activity. The student should contact the instructor as soon as circumstances allow and appropriate documentation **must** be provided (note from physician, coach, etc). If the

circumstances are deemed as appropriate for missing the exam, the unweighted average score of all other quizzes and of half of the final exam will be used in place of the missed-with-excuse exam. If circumstances lead to a student missing more than one of the 5 quizzes counting towards the final grade, then student should immediately schedule a meeting with the instructor to discuss potential options. **There will be NO late makeup quizzes given – NO EXCEPTIONS!!**

The final exam can only be missed due to illness or family emergency and documentation again must be provided. However, in cases where the final exam is missed an incomplete (“I”) final grade will be assigned according to the policy outlined below.

**Policy on an Incomplete (I) Grade:** An incomplete grade will be assigned ONLY when the final exam is not taken **AND** the work completed to that date is satisfactory (C- or better). An incomplete grade can only be corrected by taking a regularly scheduled 1081 final exam in the next available semester. If the final exam is not taken and/or the work completed to that date is not satisfactory, and **F** grad or an **N** grade will be given depending on whether the course is taken under the A-F or S-N grading system. **The “Agreement for Making Up and I Grade” form must be completed and signed by the Instructor, student, and a third party within 48 hours of the final exam date.**

**Quiz/Exam Regrade Policy:** Regrade requests must be submitted in writing directly to the instructor (via email) within 7 days following the posting of quiz results.

**Scholastic Dishonesty Policy:** “Scholastic dishonesty is any act that violates the rights of another student with respect to academic work or that involves misrepresentation of a student’s own work. Scholastic dishonesty includes (but is not limited to) cheating on assignments or examinations, plagiarizing (misrepresenting as one’s own, anything done by another), submitting the same or substantially similar papers (or creative work) for more than one course without consent of all instructors concerned, depriving another of necessary course materials, and sabotaging another’s work.” – *Classroom Grading and Examination Procedures*. College of Liberal Arts.

**A student guilty of scholastic dishonesty will be awarded a grade of zero (0) for the quiz/exam involved. Additionally, the incident will be reported to the Office for Student Academic Integrity and to the college in which the student is enrolled. NO EXCEPTIONS!!**

As a student at the University you are expected to adhere to the Board of Regents Policy: Student Conduct Code. To review this policy, see: [http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code\\_of\\_Conduct.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Code_of_Conduct.pdf)

**University Policy Statements:**

**Grade Definitions:** <https://policy.umn.edu/education/gradingtranscripts>

**Overlapping and Back-to-Back Courses:** Enrolling in overlapping or back-to-back courses that do not allow for enough travel time to arrive at our class meetings on time is prohibited. For more information see: <http://policy.umn.edu/Policies/Education/Education/Overlappingclasses.html>

**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 <http://www.mentalhealth.umn.edu/>.

**Teaching and 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 trade, such as access to

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 <http://policy.umn.edu/Policies/Education/Education/Studentresp.html>

**Equity, Diversity, Equal Opportunity, and Affirmative Action:**

[http://regents.umn.edu/sites/regents.umn.edu/files/policies/policy\\_equity\\_diversity\\_equal\\_opportunity\\_and\\_affirmative\\_action.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/policy_equity_diversity_equal_opportunity_and_affirmative_action.pdf)

**Disability Resource Center:** Students with special needs should contact the Disability Resource Center (<https://diversity.umn.edu/disability/>), which will provide a letter to share with the instructor on how those needs shall be accommodated.

**Sexual Harassment:**

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

**Academic Freedom and Responsibility:**

[https://regents.umn.edu/sites/regents.umn.edu/files/policies/Academic\\_Freedom.pdf](https://regents.umn.edu/sites/regents.umn.edu/files/policies/Academic_Freedom.pdf)

**Equity, Diversity, and Equal Opportunity:**

[http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity\\_Diversity\\_EO\\_AA.pdf](http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf)

**This syllabus is available in alternative formats upon request.  
Please contact instructor.**

<b>Week (dates)</b>	<b>Material Coverage</b>	<b>Monday</b>	<b>Wednesday</b>	<b>Friday</b>	<b>Quiz: Quiz Material</b>
1 (9/4-9/8)	Nomenclature Ch. 3.1-3.6	<b>NO CLASS</b>	Introduction	3.1-3.6	<b>Quiz #1:</b> Review Material (opens Friday at 1:00pm)
2 (9/11-9/15)	Quantum Model Ch. 4.1-4.6	4.1	4.2-4.3	4.4-4.6	
3 (9/18-9/22)	Periodicity and Ionic Bonding Ch. 5.1-5.4	5.1-5.2	5.3-5.4	6.1-6.2	<b>Quiz #2:</b> Ch. 3 (1-6), 4 & 5
4 (9/25-9/29)	Covalent Bonding Ch 6.1-6.5	6.3	6.4-6.5	7.1	
5 (10/2-10/6)	Molecular Shape and Bonding Theories Ch. 7.1-7.4	7.2-7.3	7.3-7.4	10.1-10.3	<b>Quiz #3:</b> Ch. 6 & 7
6 (10/9-10/13)	Thermochemistry Ch. 10.1-10.5, 10.7-10.10	10.4-10.5	10.7	10.8	
7 (10/16-10/20)	Thermochemistry Ch. 10.1-10.5, 10.7-10.10	10.9-10	11.1-11.3	11.4-11.7	<b>Quiz #4:</b> Ch. 10
8 (10/23-10/27)	Gases Ch. 11.1-11.11	11.8-11.9	11.10-11.11	12.1-12.2	
9 (10/30-11/3)	Liquids and Solids Ch. 12.1-12.6, 12.7 (briefly)	12.3-12.4	12.5-12.7	8.3, 9.5-9.6	<b>Quiz #5:</b> Ch. 11 & 12
10 (11/6-11/10)	Solutions Ch 8.3, 9.5-9.6, 13.1-13.5	13.1-13.3	13.4-13.5	18.1-18.2	

11 (11/13-11/17)	Chemical Thermodynamics Ch 18.1-18.5	18.3-18.4	18.4-18.5	15.1-15.2	<b>Quiz #6:</b> 13 & 18 (1-5)
12 (11/20-11/24)	Equilibrium Ch 15.1-15.6, 18.6	15.3-15.4	15.5	<b>NO CLASS</b>	
13 (11/27-12/1)	Equilibrium Ch 15.1-15.6, 18.6	15.5-15.6	15.6 & 18.6	17.6	
14 (12/4-12/8)	Solubility Equilibrium Ch. 17.6, 17.8	17.6	17.8		<b>Quiz #7:</b> Ch. 15, 18.6, & 17 (6, 8)
15 (12/11-12/15)	No new material	Q&A for Final		<b>NO CLASS</b>	
16 (12/18-12/22)	<b>Final Exam: Cumulative</b> 8:00am on 12/19 (Tuesday) – 10:00am on 12/21 (Thursday)				