Chemistry 101: General Chemistry I

Syllabus (Lecture Section 19955; Lab Section 19956)

Spring 2023, Los Angeles Valley College

Instructor: Dr. Arno Papazyan
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LABS:	Mondays	9:00 am – 12:10 pm	online
	Wednesdays	9:00 am – 12:10 pm	AHS 341
LECTURES:	Mondays	12:30 pm – 1:55 pm	online
	Wednesdays	12:30 pm – 1:55 pm	AHS 150
OFFICE HOURS:	Mondays, Wednesdays	5:00 pm – 6:00 pm	online

PREREQUISITES: Math 125 and CHEM 060 or CHEM 068 with grades of C or better

IMPORTANT DEADLINES

Last date to enroll with a permission number: February 20, 2023

Last date to drop with a refund/no fee owed: February 19, 2023

Last date to drop this class without a "W": February 20, 2023

Last date to drop with a "W": May 7, 2023

COURSE DESCRIPTION

A study of chemical principles and laws with emphasis on chemical calculations. This course will cover chemical stoichiometry and concentration calculations, gas laws, thermochemistry, introductory quantum mechanics, bonding, molecular geometry, unit cell calculations, and colligative properties. Laboratory work includes gravimetric analysis, titration, and observation. This course is required of majors in agriculture, bacteriology, biology, botany, chemistry, dentistry, engineering, geology, medical technology, medicine, optometry, pharmacy, and physics.

COURSE FORMAT AND DELIVERY

This is a hybrid course, with both on-campus (face-to-face) and online components. Both the on-campus and online components are conducted live, and students are required to attend. That is, you must attend the zoom sessions live, just as you would for an on-campus class. The Zoom sessions will be recorded and will be available under the Zoom tab of Canvas. **You must take the exams and quizzes at the scheduled date and time**.

Quizzes and exams will be conducted on-campus, in the classroom.

Some laboratory experiments will be "virtual", while others will be conducted in the actual chemistry lab. The lab schedule is listed at the end of this syllabus.

Learning management system used for the course is **Canvas**. It will host (or link to) all course materials and resources. You will submit lab reports using Canvas. Canvas will also be used for the mandatory safety quiz. To access Canvas, please either use Canvas Login or Student Portal Login . If you have trouble logging in, please contact Student Portal Help or Virtual Valley. And here are some useful topics covering Online Student Readiness Tutorials.

REQUIRED/RECOMMENDED MATERIALS AND TOOLS

- The textbook for the course is “General Chemistry: Principles and Modern Applications”, 11th edition, by Petrucci (ISBN: 9780132931281).
    - We will not be using any online homework system by the publisher.
    - You do not need to buy the textbook from the college bookstore.
    - An inexpensive used copy or textbook rental is fine.
- You will also need a simple scientific calculator such as TI-30Xa.
- While you are not mandated to buy it, a simple molecular model set would be very useful, in obvious and less obvious ways.
- Because of the online component of this hybrid class, you need a digital device with a reliable internet connection.

CANVAS QUICK LINKS

Your Canvas Profile

Profiles allows you to update your name, preferred contact methods, and any personal links for your account. Your profile information can be viewed by all users in your courses. In an online course, your profile is an important way of letting your instructor and classmates "see" you.
Update your Canvas Profile

Would you like your instructor to know how to properly pronounce your name? You can add a link to NameBadge, a free name pronunciation tool, in the Links section of your Canvas Profile.

Here's an example from Dr. Illowsky: "*Hear my name: Barbara Illowsky.*"

Notifications

The notification system is designed to help you keep track of the activity in your Canvas sites. It's important that you customize the default settings to fit the way you want to receive notifications. (You don't want to miss any important communications from your instructor!)
Set your Notification Preferences

Other Helpful Canvas Guides Links

Student Guide Table of Contents - This will show you a list of all the topics within the Student Guides.

View your grades - Learn how to view your grades, scoring details and instructor comments on assignments.

Submitting an online assignment - Instructors can choose what kind of online submissions they want you to use. Learn how to submit your assignment online.

Responding to a discussion - Discussions are an important part on Canvas and many instructors require you to submit thoughtful responses to discussion prompts.

Using the Inbox - Many instructors prefer (or even require) that you use the Canvas Inbox (also called "Conversations") rather than your regular email account.

Using Canvas on your mobile device - On mobile devices, Canvas is designed to be used within Canvas mobile applications. Be aware that not all features are fully supported in the app. (It's recommended you do "sophisticated" tasks like taking quizzes and submitting assignments using a regular web browser.)

STUDENTS WITH DISABILITIES

If you have a physical, psychiatric/emotional, medical, or learning disability that may affect your ability to carry out assigned course work, please contact the staff in Services for Students with Disabilities. They can be contacted by email at is **ssd@lavc.edu** or by phone at (818) 947-2681. SSD will review your concerns and determine, with you, what accommodations are appropriate. All information and documentation are confidential.

COURSE POLICIES

No-show policy (about being dropped in the first week!)

- If you are not present for the entirety of the Zoom session taking place during the first week on Monday, February 6, 2023, 9:00am-1:55pm, or are not present in the lab on Wednesday, February 8, 2023, 9:00am-12:10pm, or in the subsequent lecture in the classroom between 12:30pm and 1:55pm, again for the entirety of those periods, you will be regarded as "no show" and will be dropped from the course. If you cannot make it to a class meeting (online or face-to-face) during the first week, contact me before the session (preferably before the day of the session) and explain the reason for your absence.
- If you encountered connectivity problems or other unexpected challenges during a Zoom session, please let me know as soon as it is feasible to do so.
- Unless reasonable, demonstrable, and documented causes are given by the student in a timely manner, a "no show" student will be dropped from the course.

Exclusion policy (about being dropped during the term)

- You are expected to attend every class session (both the Zoom sessions and on-campus class) at the scheduled time, as well as attend every lab session (again, both the Zoom sessions and on-campus labs) at the scheduled time.
- Being present less than 75% of the class time cumulatively during the term, or being present less than 50% of the class time during any given week is cause for being dropped from the class. If there are exceptional circumstances that you can document, please let me know ahead of time if at all possible, or the same day as the class you missed at the latest. If your documented circumstances justify your absence, and the absences do not continue, you may be allowed to remain in class.
- If your performance on the quizzes and exams indicate that you are not engaged with the course material, you can be dropped from the class. In other words, being "present" in class (or Zoom session) is not sufficient to demonstrate a real student-course relationship if you are turning in exams that lack meaningful knowledge and skill about the material covered. For example, scoring regularly 20% or 25% on multiple-choice exams where questions have 5 choices corresponds to roughly what one would score based on pure chance, indicating a complete absence of knowledge relevant to the course. Of course, as long as you are asking for help, and demonstrating engagement but are struggling, that is completely different. I will do my very best to help you catch up and give you guidance and support and will keep you on the roster as long as you are trying.
- Absence from more than two labs will cause you to fail the class regardless of your quiz and exam scores. This is a "lab science course", and labs are an essential and non-negotiable part of it. It is accepted as a transferrable "lab science course" course by other institutions, in part, but fundamentally, due to the lab component. In order to avoid being counted as "absent" from a particular lab, you need to do all of the following:
    - Be present when we are covering the lab.
    - Display engagement and activity when prompted during the time when we are covering the lab.
    - Turn in a lab report that contains your own original (not copied or plagiarized) work that is reasonably complete and correct. That means you cannot be counted as "present" by showing a

token engagement but turning in a report that shows no meaningful knowledge or skill retained from the activity. Of course, if you need help with your report, feel free to ask for my help (as well as your peers). As long as you are trying and asking for help, I will make sure you have all you need to submit a report that is "reasonably complete and correct". In other words, in order to count as "present" you simply need to display a sincere effort for the entirety of the lab, including the preparation of the report.

- While you can expect to be dropped due to accumulated absences described above, you should not rely on being dropped automatically. Your circumstances may be regarded as too ambiguous to drop you from the class, for example. Or you might misjudge or miscalculate how much absence you accumulated and may still be in good standing on the deadline for withdrawing with a W. If you wish to receive a W and avoid an F, you should withdraw from the course before the deadline rather than rely on your lack of engagement to trigger an automatic drop by your instructor. Giving up on the course at some point does not mean that the attendance data on the deadline day justifies your being dropped by the instructor yet.

Although this "exclusion policy" section is detailed and long, I hope very much that it will be irrelevant for each and every student in my class. Ask for my help, advice, and guidance before you choose to give up on succeeding in the course.

Late work policy

Lab reports that are submitted late will receive a zero grade. The deadline to submit your lab reports will be shown on Canvas for each lab assignment. You will have plenty of time to prepare your reports. Please do not wait until the last few hours of the deadline for submission. Plan to finish working on the report at least a day before the deadline. Even if you miss the deadline for a lab assignment, you can submit a reasonably complete and correct lab report late in order to avoid being counted as "absent" from the lab, assuming you satisfied the other requirements for being counted as "present" for that lab. This would be relevant for avoiding too many lab absences.

Since homework is not graded, there is no late work policy regarding homework.

Policy on expected behavior, including academic honesty

- Act respectfully, collegially, and ethically toward your peers as well as your professor.
- Use polite and appropriately respectful language when addressing the professor, in written correspondence as well as conducting yourself in person. A modicum of behavioral standards will be demanded of you, as is standard in any professional environment. Starting your email to your professor with "Hey" is probably never really appropriate regardless of how great your rapport is. I personally don't mind the informal approach. However, building the habit of erring on the side of politeness is wise.
- Also pay attention to the content of your message, not just the superficial appearance of politeness. One can convey maximally rude messages using polite-sounding sentences.

Obviously, cheating and any other similar conduct violating the academic code of conduct will not be tolerated, and will be treated according to guidelines contained in the code. Students must read and understand the rules, expectations, and consequences of violating those, as described under "Policy on Academic Integrity" on p.208-211 of the Los Angeles Valley College catalog:

Los Angeles Valley College 2022-2023 Catalog

The rules will be strictly enforced and academic dishonesty in any form will not be tolerated. This includes, but is not limited to, cheating on exams, changing answers on assignments after submission, copying of

lab reports, and falsification of lab data. If such dishonesty is discovered, all students involved will obtain an automatic zero on their assignment, be reported to the campus disciplinarian, and possibly receive an F grade in the course. A zero score obtained due to cheating will count towards your final grade – it cannot be substituted or dropped!

Homework and practice expectations

Homework is not graded. Whatever modest contribution you might expect to gain from homework assignments is almost entirely beside the point. You must accept and internalize the idea that homework and practice is necessary to thrive in a physical science course. The actual contribution of homework with 0% formal contribution is in effect actually 90%. If you are able to successfully and independently answer the homework questions, you are virtually assured of success in the course. Work on the homework problems (and make sure you can come up with the correct answer for each question) to increase your chances of success, not because you will receive a few percentage points. **You will fail if you don't do plenty of homework**. As an absolute minimum, you should be able to solve (ultimately with no help or consultation) all the practice questions provided as well as many of the relevant problems from the end of chapters as possible. You shouldn't expect to be able to answer questions fully without help at the beginning of your studying of a topic, but you should strive to do so ultimately, and before the test. If you can't do that, you won't be able to answer any similar test questions either.

Problem solving and practice is integrated into the flow of the sessions. Participate in active problem solving during the live sessions.

For each chapter, Problem-Solving Handouts (containing relatively basic questions), and Chapter Review Questions (containing more challenging questions) are available to download from Canvas.

It is even more important to work through the practice and selected end-of-chapter questions available at my website, papazyan.org

Laboratory policies and expectations

You must score 46 points out of 48 on the Lab Safety Quiz by its due date shown on Canvas in order to be in good standing in the course. You can re-take the quiz as many times as you need. All the information you need, including an example version of the quiz very similar to the one you will be taking, is provided in the Safety Quiz description on Canvas.
Students are expected to:

- take active part in the work with their lab partner(s),
- report their data individually,
- do their own calculations,
- turn in an individual report for grading purposes

To work efficiently and meet the required deadline for turning in the lab reports, you must come to the lab session well prepared. This means:

- Read carefully (several times, if needed) the experiment (both Principles and Procedure) prior to coming to the lab session.
- Understand the theoretical and conceptual basis of the experiment.
- If you are collaborating with another student, make sure your words and calculations are yours, you understand what you learned from someone else, performed the calculations yourself, and expressed your own thoughts. So, **don't copy somebody else's work, and don't let others copy yours**. Don't be surprised if you lose most or all of **your lab grade** as a result of participating in plagiarism.
- The completed report needs to be submitted in digital form on Canvas by the due date and time indicated on canvas. Late lab reports will receive a zero grade, and will count as missing. A missing lab report will automatically count you as absent from the lab even if you submitted the prelab and came to

the lab session. Your submitted report will receive credit only if you were not counted as absent from the experiment.

- If you are collaborating with another student, make sure your words and calculations are yours, you understand what you learned from someone else, performed the calculations yourself, and expressed your own thoughts. Don't be surprised if you lose most or all of **your lab grade** as a result of participating in plagiarism. Using online tools to generate text that is not yours is also plagiarism.
- If your work shows that you did not listen to instructions during the lab, expect a significant reduction in the lab grade. You must be present in mind as well as body.
- Your work must be submitted in the form of a single pdf file that includes all the pages, any extra sheets showing calculations if needed, any charts if needed. The pdf must be in portrait mode, and should not show your work sideways, upside-down, etc. Your work must be legible, organized, labelled, with enough description of your calculations to make it reasonably easy to follow. You must not expect your instructor to read your mind or do detective work to decipher what is in your report. What cannot be readily followed in your report form is graded as "incorrect". Make sure your work is conveyed clearly.

  If you miss more than two labs before the "Last date to withdraw with a W" deadline, you will be dropped from the course. If you end up missing your third lab after the "Last date to withdraw with a W" deadline", you will not be dropped, **but instead your lab average will be zero**, as explained under the "Grading policy" section below. This is a "lab science course", and labs are an essential and integral part of it. Also, please remember that you are not entitled to be dropped automatically if you are no longer in good standing due to lack of attendance. It is your responsibility to withdraw from the course if you are unable to fulfill the commitment you made when you signed up for the course.

Policies on quizzes and exams

There are 3 quizzes and 3 midterm exams.

Quizzes and exams normally assess the newly covered topics since the last exam. The exact coverage of a quiz or exam may be different from what is listed on the schedule. If so, you will be informed about it.

Both quizzes and exams may include questions on any of the laboratory experiments conducted up to that point.

There are **no make-up exams or quizzes before or after the scheduled time of an exam or a quiz**. **Lowest exam score and lowest quiz score are dropped at the end of the semester.** In other words, life's unexpected challenges are handled without relying on the instructor's subjective judgement. This setup also avoids the inequitable situation where a student takes a test that is different from the rest of the class or has more (or less) time than the rest of the class to study. While no method could be perfect, this arrangement is meant to be the fairest way to address the challenges the students may face during the semester objectively.

The final exam is mandatory and cumulative. Therefore, it includes all the topics covered. It also includes lab-related questions. It has a hefty weight in determining your overall grade, and every student must take it (mandatory). Performance on the final can have a large impact on your ultimate letter grade.

There is **no make-up final** exam. Missing the final exam results in a final exam grade of zero and results in a "fail" in the course.

Grading Policy

Quizzes, midterm exams, and the final exam ("tests") will be mostly multiple choice, but may also contain short-answer questions or questions that demand that you show your work. If there is an error in the answer key, the initial grades will be modified according to the correct answer key. Tests are given in multiple randomized and scrambled versions to different students. The same question will have different numbers, names, or chemicals in different versions (and will appear at different places in the test, with

answer choices scrambled as well). The randomization is done algorithmically and a "bug" in the algorithm may render a question in one or more of the test versions invalid. When that is the case, the question will be graded as "correct" for everyone regardless of the version they took in order to ensure everyone had equivalent tests, and the time used on the invalid question was acknowledged in a way that errs on the side of the student. Just make sure you do not spend undue amount of time on a question that mystifies you (it may be an invalid). Go back to that question if and when you have dealt with the rest of the test questions. Tests may be "curved", but that is by no means guaranteed, and will certainly not be done in response to complaints about low grades or the classic-but-invariably-unjustified objection "but some of the questions weren't exactly like the practice questions, therefore the test was too difficult and unfair". Having said all that, I assure you that the average test grades in my classes have consistently been quite "normal". If you earned an undesirable grade on a test, it is almost certainly because of something you can improve on rather than the test being unfairly difficult, or your professor being unreasonable or evil. Focus your energy accordingly and ask for my guidance.

Grades are not accumulated as points. Instead, the averages of various "assignment groups" (namely Quizzes, Exams, Lab safety quiz, Pelabs, Lab Reports, and Final Exam) are added up according to their percentage weights. Almost all assignments (except the Lab Safety Quiz) are graded out of 100 for simplicity (and not because they all have the same point value, which is meaningless in our grading scheme). The average for the Exams is calculated after the lowest one is dropped (this is done automatically by Canvas). The same is true for the Quizzes.

Some of the reasons you can lose points on lab work are explained under "Laboratory Policies and Expectations".

Lab grades assigned during the term are only "projected" grades and are not formally <u>earned</u> until you satisfy the lab attendance requirement <u>by not missing more than two labs during the entire term</u>. That is, each lab assignment is formally incomplete and can only earn the projected (assigned and shown) grade **after** you satisfy the lab attendance requirement at the end of the term. **If you miss more than two labs, all of your lab assignments remain incomplete and revert to zero.** If you miss more than two labs before the "Last date to withdraw with a W" deadline, you will be dropped from the course. If you end up missing your third lab after the "Last date to withdraw with a W" deadline", you will not be dropped, **but instead your lab average will be zero** because all of your lab assignments will remain incomplete due to the lab attendance requirement and the projected (conditionally assigned and shown) lab grades will revert to zero. That is obviously extremely undesirable. Please do not think that you can neglect your responsibility to complete all the labs because you are doing well on the quizzes and exams. The lab component is fundamental to this "lab science course", which is transferrable to other institutions in part but crucially because of the assumption that the student has completed the lab component. **Make sure you understand this policy** and satisfy the lab requirement sincerely and honestly, as **<u>you agreed</u>** to do when you signed up for this lab science course.

Below are the precent weights of all assignment groups:

Quizzes	15%
Exams	35%
Lab Safety quiz	1%
Lab reports	25%
Final Exam	24%
Total	100%

Below are the letter-grade thresholds:

% Grade*	Letter Grade
90-100	A
80-89	B
66-79	C
56-65	D
0-55	F

* These cutoffs are applied after your average grade is rounded to the nearest integer. For example, 89.51 would be treated as 90 and would correspond to an A, while 89.49 would receive a B.

The lowest exam and the lowest quiz are dropped.

Possible mistakes any assessments or assignment grades must be brought to your instructor's attention on the same day as receiving the information that is being claimed to need correction.

Letter grades are determined mathematically from the sum of your grades, and are **not negotiable**. They represent your overall performance, ***not*** **your needs,** ***not*** **your aspirations, and** ***not*** **how hard you worked**. The only way to improve your letter grade is to improve your **performance**:

- by following the study advice I provided during the term, **not after**
- by asking for more detailed and personalized explanations of points that are unclear to **you**, again **during** the semester or session.

On extra credit

Any extra credit opportunity, if offered, will serve a pedagogic purpose. It will not be for boosting lackluster grades. And it will definitely not be in response to requests. Asking for an extra credit opportunity will only diminish the probability of it happening. That is because any perception that I grant extra credit if asked insistently enough would establish unhealthy expectations in future semesters.

GROUND RULES, GUIDELINES, AND ADVICE

The kind of learning you must do in this class

Almost all of your actual learning occurs outside of lecture. Don't be shocked by this!

PowerPoint slides and lectures are not meant to be mindlessly copied or memorized. Naturally, you might end up needing to memorize some terms, names and formulas if your practicing did not naturally commit them to your memory. But that should be relatively rare. You develop your depth and understanding by solving as many practice questions as possible, thus converting initially memorized items into acquired

knowledge and master the thinking process involved. In fact, through practice you eliminate most, if not all, of the memorization. Numerous practice questions are supplied on my website. When you find a practice question too difficult to answer or a concept too confusing, you should ask my help by email or during office hours. **You** are ultimately responsible for your success, even though I provide as much help and guidance as possible.

Do not demand this course to be like a high school course.

Do not demand this course to be a training to "just solve the problems" and bypass understanding.

Do not demand or depend on "executive summaries".

The goal is not to memorize some tricks and procedures to just get the answers. Don't rely on "pattern recognition" to recognize a problem with a memorized recipe to be populated with the numbers you pick from the body of the problem you think you recognized. That will fail too often, and even when it works, it will prevent you from learning the concepts.

You absolutely do need to be able to arrive at the correct answers, but through understanding what it is you are doing rather than applying some recipe you crammed or memorized. The conceptual understanding of what the problems are asking about is not fluff or unnecessary nonsense. **It is the reason the course exists**. Expecting your professor to help you avoid that understanding and "just get the answers" is not reasonable. That should not be your idea of good teaching or proper learning.

What I am talking about here is not just about "doing the right thing". The thinking skills and the healthy attitudes you acquire now will impact how qualified you will be as a professional as well as an informed, thinking citizen.

My goal **is**

- **Not to** train technicians who can only plug in numbers according to some script and recipe
  - Teaching humans how to be automatons is a relic of the 19th century factory culture; it's time to move on
  - The real automatons will only increase their share of the labor space and you need to be one of those humans who can think and reason competently and creatively
- **Not to** instill/encourage the "executive" or "manager" mindset ("just the result-getting summary please, the tedious thinking and boring groundwork does not belong in this office, thank you very much")
  - Nothing particularly wrong with the executive mindset, but that would be wildly premature and inappropriate at this stage

My goal **is**

- To encourage disciplined and flexible thinking
- To give a glimpse of actual scientific thinking (rather than simply course-passing or test-acing)
  - and to also show that chemistry is not the dead, cut-and-dry, just-memorize-facts-and-recipes, get-your-flashcards-ready kind of activity you might have been led to believe it is

On study habits and style

Don't focus on memorizing!

Prepare for each class by reading appropriate sections of the book, going over the slides posted online, and the online documents and resources provided. You don't need to achieve a full and deep understanding at that point, but mainly an exposure to the ideas and procedures to be covered. This will make it easier for you to spend more time in class listening, learning, and asking questions instead of just copying notes.

Memorizing examples and expecting very similar questions on the tests will not work well enough. Mindless copying of "rules" and examples is not note-taking, and memorizing those is not learning. Actual understanding of the concepts and applying them to new questions are key to growth. Don't expect to leave the lecture (virtual or otherwise) with anything more than a passing familiarity with the subject. You haven't truly learned anything until you gain a lot of practice answering questions and solving problems.

"Homework"

Every individual is different, but it is generally recommended that you schedule **at least 2 hours every day** (7 days a week, not just on the days when there is class) to study, solve many problems, and complete the lab assignments. Increase the amount of time you dedicate if necessary. Don't relax just because you have a few days between today's class and the next one. Use the intervening days to get better at the subject. Don't relax just because the next quiz or exam is not near. You need to keep up with the coverage whether you are being tested very soon or not. Diligently work through all the suggested homework problems and practice questions (available on the class website), and then do some more. **You will learn best by struggling to solve them and by making mistakes**. You must work through and master the problems by **yourself** to do well in this class. Following somebody else (solutions manual, instructor, tutor, friend, online videos, etc.) answering the questions is not enough, even if you feel that you follow and understand the logic. Again, you must solve problems **yourself**, and lots of them. You, your pencil, eraser, calculator, periodic table, and a list of constants that may be needed, against the question. Just like on a test. That is the only way you can actually learn.

If you find yourself coming up with "rules" and "shortcuts" that are nowhere to be found in the lectures, stop. Check with me to make sure the "shortcut" is actually reliable or valid.

If your answer to a question was incorrect the first time, re-try using the correct answer (from the key) as a guide. If you still cannot solve it, study the solution provided. Then put away any solutions, resources, etc. and restart from the beginning of the question. If you get stuck, repeat until you can solve the question from beginning to end. Then re-try answering the question the next day (or several hours if there is no time before a test) again from beginning to end.

You can't do well without solving a lot of problems. Practice questions, suggested problems from the book, and the examples solved in class are necessary for learning the concepts. But remember: they don't necessarily mimic the exam and quiz questions.

On the importance of sleep

While it is sometimes unavoidable to be sleep-deprived, you should make every effort to get enough sleep every night. "Enough" sleep varies from person to person, and 7-8 hours is reasonable. However, persistently getting only 6 hours of sleep will leave virtually anyone as sleep-deprived (as measured scientifically by performance on mental tasks) as not having slept at all the night before, but the 6-hours-of-sleep-a-night person will not be aware of the severity of the situation, and claim to "feel fine". However, lectures will sound impenetrable and meaningless and exam questions will look alien if you are suffering from sleep-deprivation (knowingly or unknowingly).

And don't study if you are sleepy. Cramming for an exam the night before is a bad idea under any circumstances, but doing that at the expense of your precious sleep is a very bad idea. As you get tired, hours will pass while you make 10 minutes' worth of progress. Those hours are much better spent getting the sleep your brain needs. Resume your study after you get your sleep.

Please don't ignore this.

On grades you "need"/"want", and how to pursue them

Throughout the semester, you will find that I make every effort to ensure that you are treated fairly and that your ultimate grade reflects your overall performance. You will also find that I put in a lot of effort to make sure you understand and master the material. Having done more than my part throughout the semester allows me to enforce the letter-grade cutoffs that are stated in the previous page without hesitation. Please understand that the cutoffs are firm and are not subject to negotiation or changes based on your needs or aspirations. Missing a cutoff by 0.1% is painful (and believe me it would pain me greatly to see), but is part of the letter-grade system in which we have to operate. Avoiding such unfortunate circumstances is naturally your responsibility, by putting in the necessary effort and time during the semester, including the use of office hours, and using all the resources at your disposal. Sending me an email pleading for a higher grade makes a "curve" less likely because it would encourage the wrong behavior and wrong expectations. **Please do not contact me about raising your letter grade if you don't want to eliminate the possibility.**

Take the advice I will give you throughout the semester to heart. It will help you take advantage of what I offer. It is possible to get a good grade (probably with decreased understanding of concepts) even if you reject or ignore the advice and do things "your way". But then you will find the class unsatisfying, confusing, or even painful to endure. If that is the case, I simply ask that you take responsibility for that self-inflicted pain.

It is tempting and normal for each of us to consider ourselves special, and feel that a particular advice or warning applies only to less special, less clever, less resourceful people. **It is an act of wisdom to resist that temptation!**

On recommendation letters

Read this if you think you might ask for a letter of recommendation from me in the future.
In addition to the minimum requirements of civility and decency expected (obviously), you must display more meaningful indications of intellectual curiosity, appetite for learning for its own sake, and a genuine and demonstrated appreciation for what we are trying to accomplish in this class. You must make a distinct, positive impression well beyond receiving an A in the course. Depending on the circumstances, a supportive recommendation letter might be justified for a student who received a B (or even a C, in exceptional cases), and might not be justified for a student who received an A due to lack of information about the student beyond the grades. That does not mean that I have any negative thoughts about the student or that I do not care about their future. The simple, ethically dictated fact is:
My letter needs to be able to convey independent, extra information I acquired about you when you took the class — beyond what is already in your transcript.

OBJECTIVES (#1–3) AND STUDENT LEARNING OUTCOME (#4):

Upon successful completion of CHEM 101, General Chemistry I, the student will be able to:

1. apply principles of modern atomic theory to chemical phenomena
2. use qualitative and quantitative analysis to explain chemical phenomena,
3. demonstrate proficiency in assembling basic laboratory glassware, performing fundamental laboratory techniques, making and recording relevant experimental observations and interpreting the results, and
4. solve chemical problems involving gases, solutions, and energy.

SCHEDULE (The pace of covering the subjects in lectures will vary slightly in practice)

Week of		Monday Lab (online)	Monday Lecture (online)	Wednesday Lab (on campus)	Wednesday Lecture (on campus)
1	02/06/23	Intro; **Ch.1** Matter & Measurement	**Ch.1** Matter & Measurement	Safety training, Check-in Problem solving	**Ch.1** Matter & Measurement
2	02/13/23	*Lab: Graphs*	**Ch. 2** Atomic Theory	*Lab: Balances*	**Ch.3** Chemical Compounds
3	02/20/23	No classes (Presidents Day)		Problem solving	**Quiz 1 (Ch. 1 & 2)** **Ch.3** Chemical Compounds
4	02/27/23	Problem solving	**Ch.4** Chemical Reactions	Problem solving	**Exam 1 (Ch. 1-3)** **Ch.4** Chemical Reactions
5	03/06/23	*Lab: Nickel (II) Salt*	**Ch.5** Reactions in Solutions	*Lab: Metathesis Reactions*	**Ch.5** Reactions in Solutions
6	03/13/23	*Lab: Copper Chemistry and Redox Reactions*	**Ch.5** Reactions in Solutions	Problem solving	**Ch.6** Gases
7	03/20/23	Problem solving	**Ch.6** Gases	*Lab: Determination of the Gas Constant*	**Quiz 2 (Ch. 4, 5)** **Ch.6** Gases
8	03/27/23	Problem solving	**Ch.7** Thermochemistry	*Lab: Molecular Mass of a Volatile Liquid*	**Exam 2 (Ch. 4-6)** **Ch.7** Thermochemistry
9	04/03/23	**Spring Break**			
10	04/10/23	*Lab: Internal Energy Problems*	**Ch.8** Electrons in Atoms	Problem solving	**Ch.8** Electrons in Atoms
11	04/17/23	*Lab: Bomb Calorimetry*	**Ch.8** Electrons in Atoms	*Lab: Hess' Law of Heat Summation*	**Ch.9** Periodic Properties
12	04/24/23	Problem solving	**Ch.9** Periodic Properties	*Lab: Atomic Emission*	**Ch.10** Chemical Bonding I
13	05/01/23	Problem solving	**Ch.10** Chemical Bonding I	*Lab: Determination of % KHP*	**Ch.10** Chemical Bonding I
14	05/08/23	*Lab: Determination of % KHP*	**Ch.11** Chemical Bonding II	*Lab: Vapor Pressure and Enthalpy of Vaporization*	Organic Nomenclature (parts of **Ch. 26**)
15	05/15/23	Problem solving	**Ch.12** Intermolecular Forces	*Lab: Molecular Models*	**Quiz 3** (Ch. 7-11, organic nomenclature) **Ch.12** Intermolecular Forces
16	05/22/23	Problem solving	**Ch.12** Intermolecular Forces	Lab check-out Review	**Exam 3** (Ch. 7-12, organic nomenclature) Review
17	05/29/23	No classes			
18	06/05/23	**Final Exam** (includes everything covered) IN CLASS! NOT ONLINE! 12:30pm-2:30pm			