

# CHE 1052, General Chemistry I

## Syllabus, Fall 2023, Aug. 28 – Dec. 15

This is a 4 unit chemistry course taught by the Department of Chemistry at PLNU. Chemistry is a fundamental building block of life since every physiological process ultimately involves chemical reactions. Throughout this semester, I strongly encourage you to review class work regularly, practice problems daily and ask as many questions as necessary in order to succeed. Talk to me one-on-one early and often; helping students like you discover this field is my favorite part of my job.

**Dr. Samuel Stoneburner, Assistant Professor**

**Office:** Rohr Science 322 (enter through 330)

**Email:** sstonebu@pointloma.edu

**Phone:** 619-849-7230

**Lecture location:** Taylor Hall 106

**Section 3:** MWF: 8:30 am – 9:35 am

**Final:** Fri., Dec. 15, 4:30 pm – 7:00 pm

**Communication:** I will post information and announcements via Canvas. You should activate notifications. When I am not available in my office, the best way to reach me is by email. I will attempt to respond within one business day. Emails sent from non-PLNU email addresses may be diverted to a spam folder instead of reaching my inbox.

**Drop-in Hours:** MWF, 10:30am – 11:30am, 1:15pm – 2:00pm

TR, 8:30am – 10:00am

You do not need an appointment to meet with me during any of the above hours. If you would like to meet at another time, please email me to schedule an appointment with suggested meeting times.

**Course Description:** Study of the basic principles of modern chemistry. Emphasis on atomic and molecular structure, chemical bonding, gas laws, states of matter, and solutions.

**Prerequisite(s):** Satisfactory high school background or CHE 1003 or PSC 1014

**Corequisite(s):** CHE 1052L (lab, graded separately)

### Course Materials:

- **Textbook:** Tro, Chemistry: A Molecular Approach Plus Modified MasteringChemistry with eText, Pearson, 6<sup>th</sup> Edition, ISBN-13: 9780137831968 (etext)
  - A loose-leaf hard copy can be purchased directly from the publisher within MasteringChemistry under the “Pearson eText”.
- **Online Homework:** MasteringChemistry [mlm.pearson.com/enrollment/stoneburner14773](http://mlm.pearson.com/enrollment/stoneburner14773) (bundled with text or purchased separately)
  - Course ID: **stoneburner14773**
  - Check your device here: [mlm.pearson.com/northamerica/masteringchemistry/system-requirements](http://mlm.pearson.com/northamerica/masteringchemistry/system-requirements).
- **Scientific Calculator:** **Non-graphing, non-programmable** calculator required for exams and quizzes. (Acceptable models include, but are not limited to, a TI-30XIIS or a Casio FX-115ES.)
  - Business or accounting calculators, such as the TI-30XIIB, are *not* recommended.

**About your professor:** I grew up in Michigan in the 1990s. I worked retail for 5 years, got an associate's degree during that time, and did exciting things like getting elected to the local library board and play Settlers of Catan (although we never played Catan at board meetings, sadly). While getting my bachelor's degree I majored in chemistry and math, but my most memorable lessons were from seemingly unrelated classes like art and New Testament Greek. I moved to Minnesota for grad school, where I got married, got my four kids, and my Ph.D., in that order. Before coming to Point Loma, I taught at Messiah University in Pennsylvania for three years, most of which was during the pandemic. (I've taught Gen Chem over Zoom, in a theatre, and in a basketball gym.) My hobbies include plotting to take over the entire Tri-State Area and encouraging my children to play more video games.

### Foundational Explorations Mission:

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

**Course Learning Outcomes:** An understanding of chemistry is a necessary part of an education in the basic and applied sciences, engineering, and medical professions. It also provides insight and increased comprehension regarding current events and proposed policies. Specifically, upon completion of this course, students will be able to:

- Demonstrate a foundational knowledge of the general principles of chemistry including atomic and molecular structure, chemical bonding, states of matter, and behavior solutions.
- Solve problems related to unit conversions, stoichiometry, energy calculations, and gas laws.

Foundational Education Learning Outcome 1e Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature. This learning outcome will be assessed directly using problems on the final exam that are quantitative in nature.



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### PLNU Mission: To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

## ***Grading and Assessment***

*“The risk I took was calculated, but man, am I bad at math.” – The Mincing Mockingbird*

Letter grades will be assigned according to the following scheme:

<b>A-range</b>	<b>B-range</b>	<b>C-range</b>	<b>D-range</b>	<b>F-range</b>
A: Any grade of 93.0% or above.	B+: 87.0-89.9 % B: 83.0-86.9 %	C+: 77.0-79.9 % C: 73.0-76.9 %	D+: 67.0-69.9 % D: 63.0-66.9 %	F: Any grade below 60.0%
A–: 90.0-92.9 %	B–: 80.0-82.9 %	C–: 70.0-72.9 %	D–: 60.0-62.9 %	

<b>Percent</b>	<b>Component</b>
3 %	Participation: Attendance
2 %	Participation: Reading surveys
15 %	Mastering Chemistry online assignments (includes pre-lecture activities and homework)
5 %	Christian practices
5 %	Quizzes
50 %	4 Exams (12.5% each)
20 %	Final Exam
100 %	Total

Important notes:

- “Extra credit”, “curving”, or “rounding up” of the final grade should not be expected or requested. The only way to achieve a given grade is to perform well on the assignments described here. Do not ask for “extra” work to boost your grade.
- Canvas will NOT have many of the current scores throughout the semester (other than Exams), so ***the Canvas total percentage is NOT a reliable indicator*** of your current performance. You can use the “What-If” tool in Canvas to obtain estimated grades, and you are welcome to request clarification as to your current status at any time.

**Participation: Attendance (3%):** Our class will involve a mixture of lecture and group activities. If you are not here, you do not benefit from the experience of others, and they cannot benefit from you. Attendance is already required by PLNU policy (discussed in more detail in the [Policies](#) section), so I like to give you points for it. To keep things simple as far as illness and emergencies, I won’t take off points for the first five absences of the semester. After five absences, you will begin to lose points, and PLNU requires that I warn you of possible de-enrollment. (See the Attendance Policy for further information.)

I will be taking attendance on Canvas at the start of every class. If you arrive late and want to be sure to get credit on your attendance, check with me after class to ensure I don’t have you absent by mistake. Being late is better than not being there at all: it will at least get you partial credit, and it won’t be counted against the absences for the university attendance policy.

*Note: The Canvas attendance tool doesn't allow me to "drop" the first five absences, so your score for attendance in the Gradebook may be lower during the semester than the final number. I will calculate your actual attendance grade at the end of the semester.*

**Participation:** *Reading surveys on Canvas (2%):* Every day there is a reading assignment, there will be a survey on Canvas due 10:00 pm the evening before where you tell me about any lingering questions you have. I will look at your responses before class (which I need time to do, hence the 10pm deadline) and I will do my best to address your questions in class that morning. I may respond directly on Canvas if I think the question is too specific or off-topic to address during class time.

This assignment is intended to be easy points that reward you for doing the reading while also helping me adjust each class to your needs. You will get credit for any responses that demonstrate reasonable engagement with the material. In other words, the only way to miss these points is to not say anything or to say something overly general like "I didn't understand any of it" or "I don't have any questions." If you feel like you understood everything, tell me what was interesting, or what you are now curious about.

To give you additional flexibility for weeks when you have an exam, a deadline, other life events, or in case you forget once or twice, I have set up Canvas to drop the lowest 10 scores. This score *will* be correct throughout the semester.

**Mastering Chemistry online homework** (Course ID: **stoneburner14773**): The Mastering Chemistry content includes assigned homework problems as well as pre-lecture activities. Practicing what you are learning both before and after attending lecture is the most active (and most effective) part of your efforts in the course. Due dates will be found within the Mastering Chemistry system, **not on Canvas**. The deadlines for assignments will generally be 8am on Mondays, Wednesdays, and Fridays for pre-lectures and 11:59pm on Mondays, Wednesdays, and Fridays (or on Tuesdays and Thursdays just before an exam) for homework problem sets.

If you find yourself struggling with a problem repeatedly (e.g., 5 wrong answers to the same problem), you should come to my office hours and ask for help. A notebook with your work on previous attempts to a problem is especially helpful when you are asking for my assistance. Using a notebook also creates a written record that you can consult later as you study or seek assistance, and it can be beneficial in the event of academic integrity questions.

I have gone to great effort to keep the homework assignments from being any longer than necessary. Most of the time, you will probably need additional practice on some topics, but only you can decide *which* topics. After completing the assigned work, you can find additional practice in the end-of-chapter problems in the textbook. Doing so is *strongly* recommended and I am happy to help you with any questions that may come from any of those problems. *You should also use the "Study Area" in Mastering Chemistry, which includes suggested additional practice problems, practice quizzes, videos, and interactive examples.*

Scores will be taken from Mastering Chemistry and put into Canvas at the end of the semester. We allow for a certain percentage of missed assignments to account for technical problems, illness, etc., so your score on Canvas may end up being a little higher than on the Mastering Chemistry website.

**Christian practices:** It may not be obvious how Christian identity can overlap with the study of natural sciences. While that will come up in relation to specific topics in lecture, one of the most important aspects is community. This assignment is designed to demonstrate the importance of community and the Christian practice of love of neighbor during our studies.

You will be assigned to a group at about the third week of the semester. The groups will be based on tables, so use the first couple of weeks to figure out who you want to work with. You will be asked to pray for members of the group throughout the semester. You will meet as a group at least three times during the semester, with the first meeting occurring in the first two weeks of class. (If your group decides to make your group a chemistry study group and meet more often, you are welcome to do so, but it is not a requirement of this assignment.)

You will be required to fill out a log that includes the times you met as a group, the times you have prayed for group members, as well as times that you have encouraged a classmate or helped them in some way. ***Do not include personal or private information like specific prayer requests in your log.*** You will hand this log in at the end of the semester and will be required to have at least 10 entries *in addition* to the three group meetings. In addition, you will be required to write a brief reflection on the overall assignment. This assignment is worth 100 points. 80 points are for the log, and 20 points for the reflection.

While PLNU is explicitly Christian in its identity, you are not required to be. Community has uniquely Christian expression, but it is not a uniquely Christian priority. You are free to replace the “prayer” component with some other mindful exercise that is compatible with your beliefs, so long as it is focused on the specific members of your group. You should still complete a log and reflection.

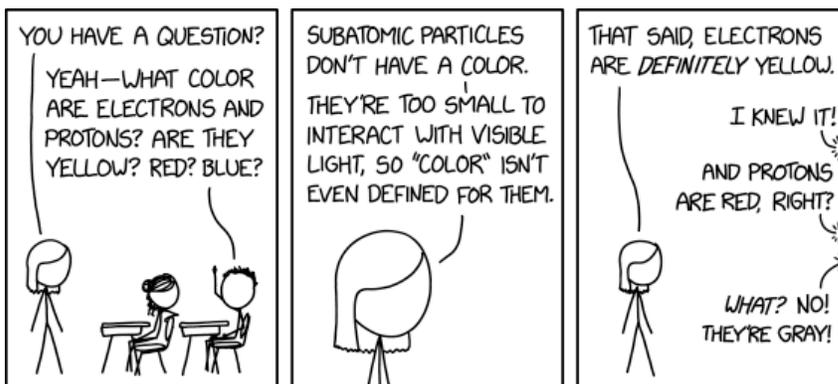
The assignment due dates for both the log and the reflection are near the end of the semester, so your Canvas score will not include either of these until then. Most students in the past have gotten all of the points for this assignment, so it can be a good way to give your grade a boost.

**Quizzes:** There will be quizzes roughly once per week covering content from the most recent few lectures. The day of the week and the delivery method (e.g., in-class vs. online) may vary. The quizzes will help you assess your understanding of the material, especially as you are preparing for exams. Look at them as relatively low-risk opportunities to identify areas where you need my help or additional practice before your next exam.

**Exams:** Exam days are on the course schedule at the end of the syllabus. Exams will not be moved outside of truly extraordinary circumstances. There are no re-takes, corrections for credit, or any other extra credit opportunities associated with exams in CHE 1052. Exam scores will not be revised or adjusted after grades are posted unless an error is found in the grading.

*Note: You must use scientific (non-graphing, non-programmable) calculators on all quizzes and exams. Quizzes and exams are written and graded collectively by all CHE 1052 instructors to ensure fairness across all sections. The return time should generally be within a week. Scores will be posted on Canvas throughout the semester.*

**Final Exam:** The final exam will be on Friday, Dec. 15<sup>th</sup>, 4:30pm-7:00pm for all sections of CHE 1052. PLNU policy is that the final exam is required and that it must be given at the scheduled time. ***No change of final exam schedule will be approved for CHEM 1052.*** Travel arrangements are *not* a valid reason to request a change to the final exam.



xkcd.com/2734

### ***Additional Notes and Policies***

*“Good men don't need rules. Today is not the day to find out why I have so many.” – Doctor Who*

**Incompletes and late assignments:** All assignments are to be submitted/turned in by the due date/time, including assignments posted in Canvas. Late work will not receive credit. Incompletes will only be assigned in extreme circumstances such as an ongoing medical situation. PLNU policy requires that “Incomplete” grades be resolved by the end of the following semester.

We realize that there may be illness, family emergencies, or other life concerns that prevent you from being able to complete occasional assignments. We have already accounted for this in the grading scheme by allowing for small percentages to be “0” before we take off points. Because we have made these allowances in advance, we do not do make-up assignments for credit. As long as you do not miss an excessive number of assignments, your grade should not be impacted.

Quizzes and exams can be made up in many circumstances, but you must request the make-up. If you are absent on the day of a quiz or exam and you do not request a make-up, you will receive a 0. If you are aware in advance that you must be absent at the scheduled time of an exam, arrange a make-up with me as soon as you are aware of the conflict. If you have an emergency or sudden illness on the day of the exam, email me as soon as you are able. Make-ups, when necessary, must generally be taken as soon as possible after the scheduled quiz or exam time.

**PLNU Attendance and participation policy:** Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (i.e., five absences for CHE 1052), the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent (i.e., nine absences for CHE 1052), the student may be de-enrolled without notice until the course withdrawal date (Nov. 3) or, after that date, receive an “F” grade.

*Note: There is no such thing as an “excused” absence in CHE 1052. The attendance grade is already set up to allow for a reasonable number of absences. Please do not submit doctor’s notes, as that will not change the absence and such notes frequently disclose an unnecessary level of personal medical information. Please do not ask the Wellness Center to provide a note, as they do not provide that service and have been inundated with fruitless requests in recent semesters. If you have a chronic medical condition that you anticipate may result in multiple absences, please contact the Educational Access Center (EAC) about the possibility of getting an accommodation for attendance.*

**Technology:** The use of portable electronic devices (phones, laptops, iPads, etc.) for purposes related to the course is welcome. Using technology for unrelated purposes during class time is detrimental to your learning and to those around you. Below are some examples:

<u>Acceptable uses of technology in class</u>	<u>Unacceptable uses of technology in class</u>
<ul style="list-style-type: none"> <li>• Taking notes</li> <li>• Viewing lecture slides</li> <li>• Looking up reference data</li> <li>• Accessing the CHE 1052 Canvas course</li> </ul>	<ul style="list-style-type: none"> <li>• Shopping</li> <li>• Watching Tiktok</li> <li>• Watching the World Cup</li> <li>• Doing work for other courses</li> </ul>

Using technology to “multitask” during class time is detrimental to your learning and to those around you. It is also a violation of PLNU’s academic behavior policy (see below). Repeatedly engaging in irrelevant activity may result in your being asked to leave the class, with a corresponding penalty to your attendance grade. If you have time-sensitive need, such as registering for courses or scheduling an appointment, speak with me beforehand and reasonable accommodations will be made.

**PLNU academic behavior policy:** Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to appropriate academic behavioral standards may be subject to discipline. In the context of our course, good behavior includes being present in class (mentally as well as physically), actively participating in group work, and asking questions when you need help or clarification. See [Academic Policies](#) in the online PLNU catalog for additional definitions of different kinds of disruptive behavior and for further policy information.

**Language and Belonging**

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice free. Inclusive/Bias-free language is the standard outlined by all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.

You may report an incident(s) using the [Bias Incident Reporting Form](#).

**Sexual misconduct and discrimination:** Point Loma Nazarene University faculty are committed to helping create a safe learning environment for all students. If you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available through the Title IX Office at [pointloma.edu/Title-IX](http://pointloma.edu/Title-IX). Please be aware that under Title IX of the Education Amendments of 1972, I am required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at [counselingservices@pointloma.edu](mailto:counselingservices@pointloma.edu) or find a list of campus pastors at [pointloma.edu/title-ix](http://pointloma.edu/title-ix)

**PLNU academic accommodations policy**

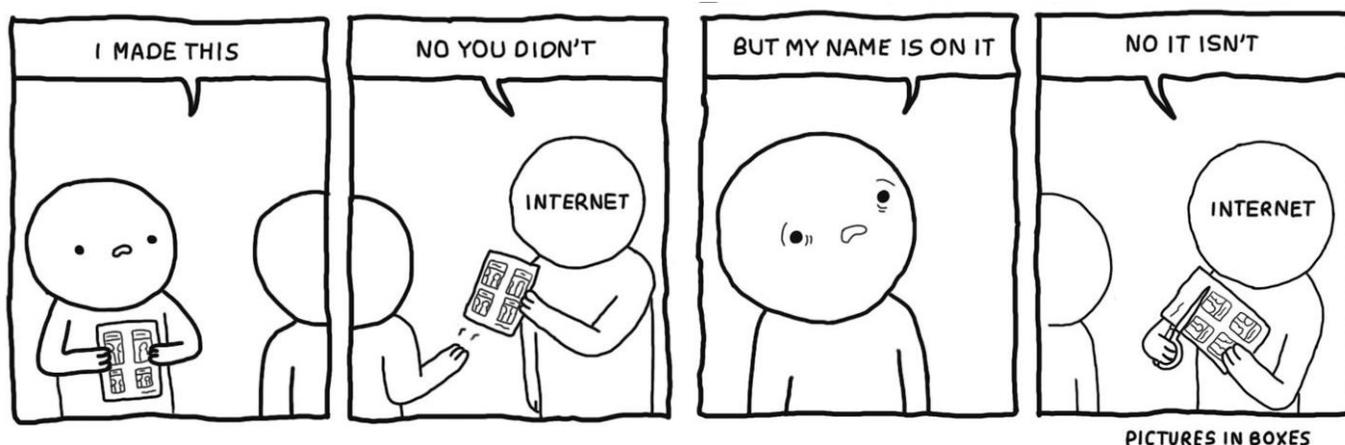
PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities. Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center ([EAC@pointloma.edu](mailto:EAC@pointloma.edu) or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will issue an academic accommodation plan ("AP") to all faculty who teach courses in which the student is enrolled each semester.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course and/or if they do not wish to utilize some or all of the elements of their AP in that course.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC.

**PLNU academic honesty policy:** Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. Faculty should follow and students may appeal using the procedure in the university Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

**Artificial Intelligence (AI) Policy:** Use of Artificial Intelligence (AI) tools (e.g, ChatGPT, iA Writer, Marmot, Botowski) is not permitted, and use of these tools will be treated as plagiarism. If you believe AI would aid learning in a specific assignment, you may ask permission in advance, but not after the fact.



**PLNU copyright policy:** Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.

**Spiritual care:** PLNU strives to be a place where students grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain, or if you have prayer requests, you can contact the [Office of Student Life and Formation](#).

**State authorization:** State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course,

continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

### ***Academic Success***

*“First Thoughts are the everyday thoughts. Everyone has those. Second Thoughts are the thoughts you think about the way you think. People who enjoy thinking have those. Third Thoughts are thoughts that watch the world and think all by themselves. They're rare, and often troublesome.” – Terry Pratchett*

General Chemistry is a challenging course. Most students who do well in it are using strategies for learning that go well beyond what would have been necessary to pass a high school chemistry course. A big part of that is ***metacognition***, or thinking about your thinking.

If you are in General Chemistry, it is probably because it is a requirement for your program, which means you can expect to see at least some of the concepts covered in this course pop up again long after you finish the quizzes and exams of CHE 1052. When I took General Chemistry, I typically took the approach of doing whatever I was told, assuming that was enough, and then relying on memorization for exams. It worked okay in the moment, but I had to re-learn everything the next time I needed it... and the time after that, and the time after that.... I would prefer to spare you that.

Ask yourself serious questions about how well you understand what you're studying, not just whether you could pass the next exam. Better yet, ask yourself if you could teach someone else... or *actually* teach someone else, whether it's a study buddy, a friend, a pet, or a rubber duck.

**I strongly recommend watching “[Strategic Learning](#)”, a talk given at PLNU in 2022 by Dr. Sandra McGuire. She is an award-winning expert in chemistry and in teaching and learning. In the linked talk, she provides a lot of practical strategies AND a broader way of thinking that will help you figure out where you need to focus your efforts.**

A lot of the advice you will get from me or from Dr. McGuire will feel like it will take more time than you can afford. You may actually save time over the semester as you get more practiced in good study strategies, but it is true that General Chemistry requires a substantial time investment.

The PLNU Credit Hour Policy states that ***2 hours of preparation per 1 hour of class time is “normal”, meaning 6.5 hours per week (besides lecture itself)*** for the CHE 1052 lecture course. You may need additional time if you find chemistry intimidating, or if you have not taken chemistry in a long time, or if you took high school chemistry in an online setting. There is no shame in needing more time. If you work strategically and put effort into learning *how* to learn, you will probably understand chemistry much better than the student who seems to get all the right answers in the first few minutes of trying.

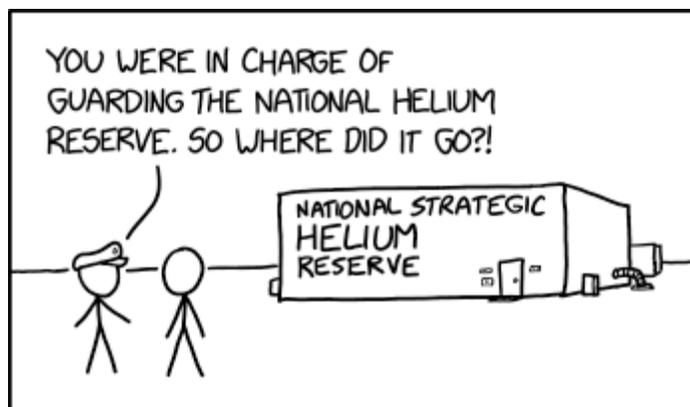
You can also maximize the effectiveness of your time by giving yourself a focused environment. Do not try to “multitask” with videos or social media while you are working on chemistry. (“Multitask” is a word that really means “doing a poor job of multiple tasks simultaneously”). I also recommend caution when consulting other resources on the internet. There is an abundance of misinformation online, much of it intentional. For example, I’ve heard from multiple teachers who put fake answers on Chegg to catch cheaters...

The advice I’m giving you is based on my experience as a teacher and a student, but you can also hear from a fellow student. I had someone in General Chemistry who made a lot of intentional changes over the course of CHE 1052, who saw a drastic improvement in grades as a result, and who was kind enough to share the lessons she learned. The following are her tips for you:

- *Go to office hours as frequently as you are confused or have questions after spending time trying to figure it out for yourself.*
- *Take all the quizzes seriously and study for them.*
- *Do the mastering chemistry homework and pre-lectures when you have a dedicated amount of time to do them; take them seriously and use them to practice and learn.*
- *Take notes in class! It helps you stay engaged and ask questions when you are confused about something.*
- *Study with other people and by yourself.*
- *Make sure you know the material well enough that you can try to explain it to someone else, and actually explain it to someone else, it helps you see where you are still not sure about some concepts.*
- *Surround yourself with people who are also taking this course seriously!*
- *Don’t cram before a test, study a week, preferably two in advance, this way it gives you the opportunity to get help, and not be too stressed right before an exam.*
- *Develop a routine on exam days, and make sure you get a lot of sleep the night before.*
- *Go through your notes frequently.*
- *Do extra practice problems, especially with problems/concepts you are stuck on... even if you don’t feel like doing it.*

Finally, know that I am here to help. If you ask me questions early and often, that goes a long way towards making sure your precious time is spent as productively as possible. I want to see you succeed, and I look forward to participating in that success.

– Dr. Stoneburner



UNFORTUNATELY, THERE'S NO GOOD WAY FOR ME TO ANSWER THIS QUESTION OUT LOUD.

[xkcd.com/2766](http://xkcd.com/2766)

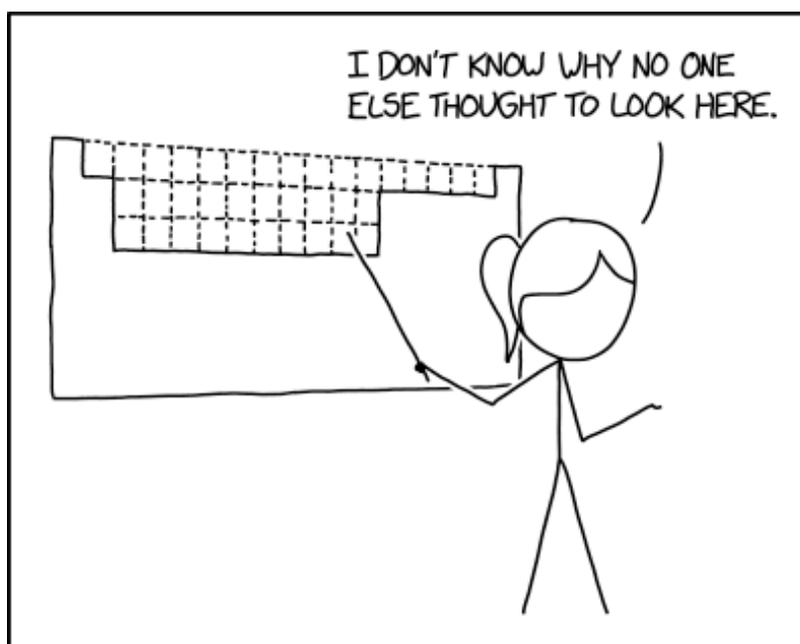
**CHE 1052: General Chemistry I: Tentative schedule**

The schedule may change during the semester. Watch Canvas for updates.

\*NOTE: Most class days have prelecture assignments (due 8am) and homework assignments (due 11:59pm).

Day	Topics	Pre-Read	Lab
M Aug 28	Scientific Approach, Classification of Matter	1.1-1.4	0: Safety and Measurements
W Aug 30	Energy, Units, Measurements, Solving Chemical Problems	1.5-1.8	
F Sep 1	Atoms, Atomic Structure, Subatomic Particles	2.1-2.6	
M Sep 4	<b>No class due to Labor Day</b>		1: Density
W Sep 6	Periodic Law, Periodic Table, Atomic Mass, Molar Mass	2.7-2.9	
F Sep 8*	Chemical Bonds, Formulas, Composition of Compounds (*Sep. 8 last day to add/drop)	3.1-3.4, 3.8-3.9	
M Sep 11	Chemical Nomenclature, Molar Mass of Compounds, Structure of Solids	3.5-3.7, 13.3	2: Zinc Iodide
W Sep 13	Composition of Compounds, Determining Chemical Formulas	3.9-3.10	
F Sep 15	<b>EXAM 1: Ch. 1.1-3.10, 13.3</b>		
M Sep 18	Chemical Equations; Reaction Stoichiometry	4.1-4.3	3: Crystal Structures
W Sep 20	Limiting Reactant; Theoretical and Percent Yield	4.4-4.5	
F Sep 22	Solution Concentration and Stoichiometry	5.1-5.4	
M Sep 25	Solubility; Precipitation Reactions	5.5-5.6	4: Acid-Base Titration
W Sep 27	Acid-Base, Gas Evolution Reactions; and Redox Reactions	5.7-5.9	
F Sep 29	Pressure; Gas Laws	6.1-6.4	
M Oct 2	Applications of Ideal Gas Law, Gas Mixtures, Gas Stoichiometry	6.5-6.7	5: Ideal Gas Law
W Oct 4	Kinetic Molecular Theory, Diffusion, Effusion, and Real Gases	6.8-6.10	
F Oct 6	<b>EXAM 2: Ch. 4.1-6.10</b>		
M Oct 9	Energy, Heat, Work	7.1-7.4	6: Molar Volume of Gases
W Oct 11	Constant-Volume Calorimetry, Enthalpy	7.5-7.6	
F Oct 13	Constant-Pressure Calorimetry, Enthalpy of Reaction	7.7-7.8	
M Oct 16	Hess's Law	7.9	No Lab
W Oct 18	Nature of Light, Atomic Spectroscopy; Bohr Model	8.1-8.3	
F Oct 20	<b>No class due to Fall Break</b>		
M Oct 23	Wave Nature of Matter, Quantum Mechanics	8.4-8.5	7: Calorimetry
W Oct 25	Atomic Orbitals, Electron Configurations	8.6, 9.1-9.3	
F Oct 27	Periodic Table, Electron Configurations, Valence Electrons	9.4-9.5	
M Oct 30	Periodic Trends and Ions	9.6-9.7	8: Hess's Law
W Nov 1	Electron Affinities, Metallic Character	9.8-9.9	
F Nov 3*	<b>EXAM 3: Ch. 7.1-9.9</b> (*Nov. 3 last day to withdraw)		
M Nov 6	Types of Chemical Bonds, Lewis Structures, and Ionic Bonding	10.1-10.4	9: Absorption and Emission
W Nov 8	Covalent Bonding, Electronegativity, Bond Polarity	10.5-10.7	
F Nov 10	Resonance, Formal Charge	10.8	
M Nov 13	Exceptions to Octet Rule, Bond Energies, Bond Lengths	10.9-10.10	10: Copper Cycle
W Nov 15	VSEPR Theory, Molecular Geometries	11.1-11.4	
F Nov 17	Molecular Shape, Polarity, Valence Bond Theory	11.4-11.7	

Day	Topics	Pre-Read	Lab
M Nov 20	Valence Bond Theory, Molecular Orbital Theory	11.7-11.8	No Lab
W Nov 22	<i>No class due to Thanksgiving Break</i>	—	
F Nov 24	<i>No class due to Thanksgiving Break</i>	—	
M Nov 27	Molecular Orbital Theory, Intermolecular Forces	11.8, 12.1-12.3	11: Lewis Structures
W Nov 29	Intermolecular Forces, Vaporization, Vapor Pressure	12.4-12.5	
F Dec 1	Sublimation, Fusion, Heating Curves	12.6-12.7	
M Dec 4	Phase Diagrams; Water	12.8-12.9	12: Enthalpies of Phase Changes
W Dec 6	Solids, Unit Cells, Polymers	13.1-13.9	
F Dec 8	<b>EXAM 4: Ch. 10-12</b>	—	
F Dec 15	<b>COMPREHENSIVE FINAL EXAM</b> All Sections Friday 4:30 – 7:00 pm (See Final Exam Schedule)	<b>Ch. 1-13</b>	No Lab



THE 2019 NOBEL PRIZE IN CHEMISTRY WENT TO THE TEAM THAT DISCOVERED THE ELEMENTS IN THE BIG GAP AT THE TOP OF THE PERIODIC TABLE.

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