



CHEM 1411.101CL
General Chemistry 1
Fall 2023

Mondays & Wednesdays from 11:00 AM – 1:50 PM in STEAM 403

Instructor Information:

Name: Dr. Luke Turner, PhD
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Student hours and location:

Monday	09:00 – 10:00	STEAM 325-23 & Virtual
Tuesday	07:00 – 07:45	STEAM 325-23 & Virtual
Wednesday	09:00 – 10:00	STEAM 325-23 & Virtual
Thursday	07:00 – 07:45	STEAM 325-23 & Virtual
Friday	11:00 – 15:00	STEAM 325-23 & Virtual
Saturday	**Virtual Office Hours by Appointment**	
Sunday	**Virtual Office Hours by Appointment**	

Required Textbook/Materials: Links to the online textbook and Aktiv Learning homework system (including enrollment instructions) will be accessible in D2L Brightspace (D2L) at the start of the semester.

Required Textbook: Averill, B.; Eldredge, P. [*General Chemistry: Principles, Patterns and Applications*](#) [Online]; Saylor Foundation, 2011. [ISBN-13 9781453322307]

Your textbook for this class is immediately available for free online. If you prefer, you can also get a printed version at a very low cost. However, before purchasing a hard copy of the textbook, consider that I will only use this resource sparingly as a reference tool. I will also provide links to other FREE resources such as online textbooks, YouTube videos and various other materials (including **ME**) that will be made available to you at no cost.

The only cost you should incur relating to course materials relates to the homework system described below. We will use this homework system routinely in class, outside of class and for assessments (quizzes and exams). You will find that I do not emphasize reading assignments in the textbook, mainly due to the ineffectiveness of passive reading for mastering problem-solving skills in science. Since I began teaching in 2006, textbooks (all versions) have served a diminished role in my classes, and this trend continues to this day. Chemistry is all about solving problems and that's where we will focus our attention. As with any subject, some of the course content involves recitation of terminology, facts, and figures that I will explicitly emphasize to you. I have

performed a “literary liposuction” of the textbook in preparation for this course; that is, I weed out the fluff and useless portions of this bloated resource so that you will not be left in the dark trying to figure out what to study. Please pursue any additional reading that interests you or you find helpful, but my reliance on the textbook will be minimal and that is reflected in my sparse references to this resource.

Recommended Homework System: The [Aktiv Learning](#) all-in-one platform system is an online homework, assessment, and content management system. Instructions for creating an Aktiv Learning system account and registering for the course are provided in the course information page located in D2L Brightspace (D2L). Once you have registered and enrolled, you can log in at any time to complete or review your homework assignments. During sign up or throughout the term, if you have any technical problems, go to <http://www.aktiv.com/support> and access the help docs or select one of the support contact options.

Additional Materials: An inexpensive scientific calculator (e.g., TI-30). I will also have calculators available for you in class and for exams. There are free apps for your mobile devices.

Computer Requirements: You will need to have access to a computer with the following resources:

- Internet access through a wired Ethernet or wireless connection
- A contemporary web browser capable of viewing flash video (Java installed and updated)
- A COM [e-mail account](#) (COM provides free e-mail for students)
- [Microsoft Office, Microsoft OneNote, and Microsoft Teams](#) (COM offers free Office 365 access for students)
- A PDF reader like [Adobe Reader](#)

Course Description: Fundamental principles of chemistry for majors in the sciences, health sciences, and engineering; topics include measurements, fundamental properties of matter, states of matter, chemical reactions, chemical stoichiometry, periodicity of elemental properties, atomic structure, chemical bonding, molecular structure, solutions, properties of gases, and an introduction to thermodynamics and descriptive chemistry. Basic laboratory experiments supporting theoretical principles presented in class; introduction of the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports.

Course Requirements: As an advanced science course, your engagement of the material is not optional. You will not be able to passively sit in the classroom and learn chemistry, so **TAKE NOTES**. If you are not used to taking notes, or do not know how, then you may seek assistance at the learning center. In some cases, I may issue “scaffolded notes” which require you to input missing terms or concepts during class. Occasionally, I will give a quiz at the end of class that will draw from the information in your notes. If you do not take notes, then it is unlikely you will perform well on these quizzes. If you miss class or are late, you will need to ask a classmate to transcribe or copy the notes you missed.

Tardiness & Quizzes: As a regular part of the course, I will be giving quizzes that relate to the homework and the previous class meeting. These timed quizzes will be released via D2L at the very beginning of class and will only be available for 5-15 minutes. If you arrive to class early, you will be able to start the quiz early for some extra time. However, if you arrive late, and miss the quiz or cannot complete it, then it will not count toward your total of 10 quizzes for the term. Please do not ask me to release it again, even if you feel you have a valid excuse for being late. You will have many opportunities to accumulate 10 quizzes, unless you are routinely late or unprepared. The quizzes are not meant to harm you, but they are a good check on your understanding of the material and reward you for being on time and prepared. Likewise, on exam days, I may have some bonus questions that will be added to your exam score, but these will only be available for the first few minutes of class. Simply stated, I want you to be on time for class. It's incredibly distracting for your classmates and **ME** when you arrive late. If you do arrive late, quietly sit down and catch up on what you missed **AFTER** class. The classroom environment is sacred, and I am very protective of keeping it orderly and free of distractions. If my instruction is interrupted by conversation (even if you are talking chemistry) or other rude behavior, you will receive no credit for the quiz, class activity or laboratory on that day. For students with chronic disruptive issues (more than two instances), you will be excused from class and marked absent, which could escalate to withdrawal for nonattendance. Sometimes we think we are invisible when whispering or softly commenting to a classmate, but you are facing me, and **I CAN HEAR YOU!** If you have trouble focusing or want to have a conversation, you can leave the classroom and go anywhere else on campus. You will not incur a penalty for leaving the classroom, and I would prefer you not to stay in class if you have nothing to add or gain from my instruction.

Respect for the Learning Environment: To maintain a distraction-free classroom environment, each student will receive a "cubby" by the entry door. When you arrive to class, you will deposit your phone and electronic devices in your cubby until needed for a quiz or other activity. If there is a quiz at the beginning of class, then complete the quiz with your smart phone or other device and then stow them away until needed for a class activity or other assignment. I will try to allow for time in class to complete homework assignments, which could require your smart phone, laptop or tablet. If you are texting, watching YouTube, or working on assignments for another class, you will not receive credit for the class activity or other optional assessments that day. My class is not a study hall for you to work on other assignments, games, college clubs, soccer(?), honor societies, enrollment for the next semester, financial aid.....anything other than Organic Chemistry. If you need to complete something for your next class, then quietly leave the classroom. You will not be marked absent for **QUIETLY** leaving my class early. Be discrete, leave the classroom, and do what you need to do; this is far more respectful than openly working (or playing) with other activities unrelated to my course.

Gossip: Please do not negatively comment or gossip about other faculty, staff or students in my classroom. Apart from being incredibly rude and destructive, this activity suggests that you probably gossip about me as well, which is not an attractive quality. I will have a very difficult time writing a recommendation for a student that has commented negatively about another faculty member. Please refrain from all gossip in my classroom, but positive remarks about faculty, staff and students are appreciated.

Letters of Recommendation: An important (and enjoyable) part of my duties as an instructor is writing letters of recommendation for my students. I am happy to do so and your grade in my class is not a consideration when I accept this task. Rather, my recommendations emphasize your personal attributes that make you a memorable and enjoyable student. For example, punctuality, thoughtfulness, effort and attitude are particularly important qualities for a recommendation letter that will stand out to a potential employer or admissions committee. Some of my most impactful and poignant recommendations have been written on behalf of students that were not in the 50th percentile of the class. Your grade in my class is not an important consideration for a letter of recommendation, so please make every effort to shine as a student in the intangibles that are not reported in your transcripts. I am certain that you will benefit more from having integrity and admirable personal characteristics than an “A” on your grade report.

Assessment: There will be many forms of assessment in this course apart from the required exams. While homework will be assigned to ensure comprehension of the requisite learning objectives, I will not collect and grade these assignments for credit. Chemistry requires a hands-on approach; therefore, YOU will be expected to independently investigate suggested homework problems and seek assistance for concepts that are problematic. Many class sessions will consist of group work and activities that will be assessed for completion and effort, but seldom for accuracy. In addition, alternative assessments will be given as an opportunity to demonstrate content mastery and through nontraditional methods. Apart from completing five exams and 70% of the lab experiments, all other forms of assessment are completely optional; you will not be penalized for failure to complete homework, quizzes, class activities, discussion boards, or other alternative assessments. Under this system, students choose their own assessment criteria. If you elect to only complete the required exams, then your final grade will be determined solely from your performance on these assessments. I will not offer extra credit assignments; instead, I have implemented numerous assessments that, in some instances, will only require participation. By choosing to complete these optional assessments, you will not only benefit from investigating relevant concepts addressed on exams, but you will also diversify your personal assessment portfolio in the course. An unsatisfactory performance on an exam can be offset by your participation in the optional assessments, however if you choose to complete only the minimum course requirements, your assessment “basket” will be heavily weighted by exams. As a college student you are faced with many choices, and the decision to complete optional components of this course is entirely up to you! Please do not approach me in the last quarter of the semester requesting extra credit or grade adjustments. I will provide many opportunities for assessment outside of the five semester exams; however, YOU must take responsibility for their meaningful pursuit and timely completion. Laboratory experiments will be conducted weekly and the lowest three lab submissions (including missed labs) will be dropped. Additionally, the exams will include material directly related to laboratory experiments, therefore regular attendance and completion of lab is important.

Table of Overall Assessment Schedule & Grading System

Assessment	Approximate Point Value	Overall Average	Grade
5 Exams	500-600 pts	$\geq 89.5\%$	A
Class Activities*	See "Optional Assessments" Table below	79.5-89.4%	B
Quizzes*		69.5-79.4%	C
Homework*		59.5-69.4%	D
Lab (Drop Lowest 3)	100 - 150 pts	$\leq 59.5\%$	F

*Optional components (see Table below)

Optional Assessments Table

Assessment	Grading Adjustment Based on Timely Completion
Class Activities	Point value averaged in with overall grade and no penalty for missing activities; for example, "5/5" or "-/5" [dash (-) is no score]
Homework	Positive adjustment to overall % average will be based on <i>timely</i> homework completion: 50% completion adds 0.5%; 80% completion adds 1%; 100% completion adds 2%
Quizzes	Completion of 10 quizzes with an average $\geq 80\%$ will replace the lowest exam score OR add 2% to overall average (greater of two)

Other grade assignments:

FN — An FN may be assigned at the discretion of the instructor in accordance with college policy.

I — An incomplete may be assigned at the discretion of the instructor in accordance with college policy.

W — A withdrawal may be assigned in accordance with college policy.

Late Work, Make-Up, and Extra-Credit Policy: Since this course is designed with a significant portion of content that is optional and penalty-free with flexible deadlines, no make-up or extra credit assignments will be offered. The five scheduled semester exams allow for a dropped score that absorbs a missed testing day, provided you complete 10 quizzes with an average $\geq 80\%$. Additionally, the final exam week will be used for any missed exams that were not taken on the scheduled date. The laboratory schedule also accommodates three absences without impacting grade performance. These "safety rails" are intended to act as buffers against any tumult that can arise during a semester. Situations that exhaust this buffer capacity would likely entail other actions such as a course withdrawal (W), incomplete (I) grade assignment, and/or a retake of the course. Such extenuating circumstances would require individual consideration which cannot be equitably addressed herein.

Attendance Policy: All students registered in this class are expected to attend all face-to-face sessions. This policy follows the attendance policies prescribed in the current College Catalog. (<http://coursecatalog.com.edu>). Failing to attend class, log into D2L, or to complete your work as scheduled demonstrates poor progress towards obtaining the course goals (objectives) and is detrimental to learning course material. If you fail to attend class or fail to log into D2L Brightspace and are demonstrating poor progress towards obtaining the course goals (objectives), the instructor *may* administratively withdraw you from the course. Examples of insufficient progress include, but are not limited to, failure to log into D2L Brightspace for a one-week period, failure to complete the required exams, failure to attend and complete 70% or more of the labs, failure to maintain a passing average for the class, or demonstrating poor progress towards obtaining the course goals (objectives). An administrative withdrawal for insufficient progress is solely at the discretion of your instructor.

Communicating with your instructor: ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means. The best way to reach your instructor is by email. Please use your @com.edu email address. Expected that mails from other sources will be filtered from my inbox and you will receive no reply. If you prefer to meet with me virtually, please make an appointment. I will strive to reply to emails from @com.edu addresses, which are made on weekdays, within twenty-four hours. Replies to voice messages left on my office telephone will take longer for me to reply than an email. Also, I will most likely reply to a voice message by email.

Student Learner Outcome	Maps to Core Objective	Assessment(s)
1. Define the fundamental properties of matter.	Critical Thinking	Selected Exam Questions
2. Classify matter, compounds, and chemical reactions.	Critical Thinking Communication Skills	Selected Exam Questions Presentation
3. Determine the basic nuclear and electronic structure of atoms.	Critical Thinking	Selected Exam Questions
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.	Critical Thinking	Selected Exam Questions
5. Describe the bonding in and the shape of simple molecules and ions.	Critical Thinking	Selected Exam Questions
6. Solve stoichiometric problems.	Empirical and Quantitative Skills	Selected Exam Questions
7. Write chemical formulas.	Critical Thinking	Selected Exam Questions
8. Write and balance equations.	Critical Thinking	Selected Exam Questions
9. Use the rules of nomenclature to name chemical compounds	Critical Thinking	Selected Exam Questions
10. Define the types and characteristics of chemical reactions.	Critical Thinking	Selected Exam Questions
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.	Empirical and Quantitative Skills	Selected Exam Questions
12. Determine the role of energy in physical changes and chemical reactions.	Critical Thinking	Selected Exam Questions

13. Convert units of measure and demonstrate dimensional analysis skills.	Empirical and Quantitative Skills	Selected Exam Questions
14. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.	Team Work	Selected Experiment Grades
15. Demonstrate safe and proper handling of laboratory equipment and chemicals.	Critical Thinking	Selected Experiment Grades
16. Conduct basic laboratory experiments with proper laboratory techniques.	Team Work	Selected Experiment Grades
17. Make careful and accurate experimental observations.	Empirical and Quantitative Skills	Selected Experiment Grades
18. Relate physical observations and measurements to theoretical principles	Empirical and Quantitative Skills	Selected Experiment Grades
19. Interpret laboratory results and experimental data, and reach logical conclusions.	Critical Thinking	Selected Experiment Grades
20. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.	Communication Skills	Laboratory Report Grade
21. Design fundamental experiments involving principles of chemistry.	Critical Thinking	Selected Experiment Grades
22. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.	Critical Thinking	Selected Experiment Grades
23. Demonstrate the ability to work effectively with others to support and accomplish a shared goal, while recognizing and respecting different viewpoints.	Team Work	Lab Grade

Academic Dishonesty: Any incident of academic dishonesty will be dealt with in accordance with college policy and the Student Handbook. Academic dishonesty, such as cheating on exams, plagiarism, or collusion, is an extremely serious offense and will result in at least a grade of zero on that assignment and the student will be referred to the Office of Student Conduct for the appropriate disciplinary action. Additionally, administrative withdrawal from the course prior to the withdrawal deadline for the semester or being assigned a grade of F after the withdrawal deadline are possible and solely at the discretion of your instructor.

Student Concerns: If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact Ms. Sheena Abernathy, Science Department Chair, at 409-933-8330/sabernathy@com.edu.

Tentative Course outline: The course schedule will be updated weekly in D2L and should be your primary resource for accessing learning materials and class scheduling. A tentative outline is tabulated below:

Week	Topics	Reading & Assignments
1	<ul style="list-style-type: none"> • Course Intro • Aktiv Learning • Measurement and Chemical Calculations 	<ul style="list-style-type: none"> • Syllabus • Aktiv Access Directions • Chapter 1
2	<ul style="list-style-type: none"> • Atomic Theory • Periodic Trends 	<ul style="list-style-type: none"> • Chapter 2 • Aktiv Problem Set

3	<ul style="list-style-type: none"> • Electron Configuration 	<ul style="list-style-type: none"> • Chapter 3 • Aktiv Problem Set • Exam 1
4	<ul style="list-style-type: none"> • Chemical Bonding • Lewis Dot Structures 	<ul style="list-style-type: none"> • Chapter 4 • Aktiv Problem Set
5	<ul style="list-style-type: none"> • Molecular Geometry 	<ul style="list-style-type: none"> • Chapter 5 • Aktiv Problem Set
6	<ul style="list-style-type: none"> • Molecular Geometry • Hybridizations 	<ul style="list-style-type: none"> • Supplemental Reading • Aktiv Problem Set • Exam 2
7	<ul style="list-style-type: none"> • Naming Ionic Compounds • Naming Acids 	<ul style="list-style-type: none"> • Chapter 6 • Aktiv Problem Set
8	<ul style="list-style-type: none"> • Naming Covalent Compounds • Chemical Formulas 	<ul style="list-style-type: none"> • Supplemental Reading • Aktiv Problem Set
9	<ul style="list-style-type: none"> • Moles • Percent Composition 	<ul style="list-style-type: none"> • Chapter 7 • Aktiv Problem Set • Exam 3
10	<ul style="list-style-type: none"> • Stoichiometry and Chemical Reactions 	<ul style="list-style-type: none"> • Chapter 8 • Aktiv Problem Sest
11	<ul style="list-style-type: none"> • Stoichiometry and Chemical Reactions • Thermochemistry 	<ul style="list-style-type: none"> • Aktiv Problem Set • Supplemental Reading
12	<ul style="list-style-type: none"> • Thermochemistry 	<ul style="list-style-type: none"> • Aktiv Problem Set • Exam 4
13	<ul style="list-style-type: none"> • Gases 	<ul style="list-style-type: none"> • Chapter 9 • Aktiv Problem Set
14	<ul style="list-style-type: none"> • Molarity • Acids & Bases 	<ul style="list-style-type: none"> • Chapter 10 • Aktiv Problem Set
15	<ul style="list-style-type: none"> • pH & Electrolytes 	<ul style="list-style-type: none"> • Aktiv Problem Set • Exam 5
16	<ul style="list-style-type: none"> • COM FINAL EXAM WEEK 	<ul style="list-style-type: none"> • Make-up Exam

Institutional Policies and Guidelines

Grade Appeal Process: Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook https://www.com.edu/student-services/docs/Student_Handbook_2023-2024_v2.pdf. *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.*

Academic Success & Support Services: College of the Mainland is committed to providing students the necessary support and tools for success in their college careers. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

ADA Statement: Any student with a documented disability needing academic accommodations is requested to contact Kimberly Lachney at 409-933-8919 or klachney@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

Textbook Purchasing Statement: A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

Withdrawal Policy: Students may withdraw from this course for any reason prior to the last eligible day for a “W” grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law. The last date to withdraw from the 1st 8-week session is October 11. The last date to withdraw from the 16-week session is November 28. The last date to withdraw for the 2nd 8-week session is December 7.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN grade.

Early Alert Program: The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

Resources to Help with Stress:

If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here <https://www.com.edu/community-resource-center/>. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at deanofstudents@com.edu or communityresources@com.edu.