



CHEM 1406-221HY-SP2023

Introductory Chemistry

Spring 2023

Mondays from 6:00 PM to 9:00pm

Online through Blackboard

Instructor Information

Name: Paul Clemens, PhD

Email: pclemens@com.edu

Student Hours: Online via zoom by appointment.

Course Communication: The best way to reach me is by email. Please use your @com.edu email address. Emails from other sources may be delayed or filtered from my inbox. This may delay or prevent my reply to your email. If you prefer to meet with me in person or virtually, please make an appointment. I will strive to reply to emails and forum posts, which are made on weekdays, within twenty-four hours. Expect that I will be unavailable on weekends.

Required Textbook:

[https://chem.libretexts.org/Bookshelves/Introductory_Chemistry/Map%3A_Introductory_Chemistry_\(Tro\)](https://chem.libretexts.org/Bookshelves/Introductory_Chemistry/Map%3A_Introductory_Chemistry_(Tro))

This link is to the general chemistry Libretexts Textmap. This OER resource is free to view online and to download in the PDF file format.

Required Software:

- [Microsoft Office and Microsoft Teams](#) (COM offers free Office 365 access for students)
- [Vernier Graphical Analysis](#) (Vernier offers free software for students) or Vernier Logger Pro

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- File conversion software for converting image files to PDF files ([Microsoft Office Lens](#), [Adobe](#)

[Scan](#), and [Genius Scan](#) are free for both Android and iOS)

- A PDF reader, such as Adobe Reader, which is freely available to students from the Adobe website: <https://get.adobe.com/reader/>.

Required Materials: An inexpensive scientific calculator (e.g., TI-30). You most likely have one on your cellphone. For the semester exams and the final exam, each student will be provided with either a TI-30XIIS or a similar TI-30 scientific calculator.

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

- Internet access through a wired Ethernet connection is recommended
- A contemporary web browser, preferably Chrome or Firefox
- Java installed and updated
- An [e-mail account](#) (COM provides free email for students)

You are responsible for maintaining your own hardware and software. If you are incapable of maintaining your own system, please use the computers available on campus. (NB, Access to college computers is limited by the hours of operation for the computer labs and library. You are responsible for keeping abreast of these times.)

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.

Course Description

Survey course introducing chemistry. Topics may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. Designed for allied health students and for students who are not science majors.

Prerequisites: Math 950+ or Diagnostic Level 6 or [MATH 0308](#) or [MATH 0320](#) with a grade of "C" or better. TSIA2 945-990 ELAR/CRC test AND 5 or higher on Essay OR 910-944 on CRC with 5-6 on Diagnostic Test + 5 or higher on Essay, or [IRW 0320](#) with a grade of "C" or better.

Course requirements

Students are expected to meet the following course requirements.

- **Stay Current:** You will use the Course Outline, the online calendar, the discussion forums, communication with your instructor, and communication with your classmates to stay abreast of course scheduling.
- **Meet Learning Objectives:** You will cover the course material listed in the Student Learning Objectives by accessing information from the textbook, from the Internet, from the Library, and from other resources, as needed.
- **Stay in Communication:** You will maintain communication with your classmates and instructor, as

needed. Typical methods for communicating include interpersonal communication, email, and discussion forum postings.

- **Complete Assessments:** Your knowledge of the material covered in the Student Learner Outcomes is assessed using online discussions, homework, exams, and laboratory experiments.

HOMEWORK (10%):

Perform and submit all of the even numbered homework to master the material and perform well on the exams.

REGULAR EXAMS (40%):

Examinations will consist of five, 20 multiple choice questions, non-cumulative regular chapter exams. The learner is expected to read and understand each chapter before the online test is accessed. You will have 90 minutes to complete each exam. **The exams will require that you use LockDown Browser while taking the exams.** These exams will consist of questions modeled from the homework. Make-up exams will **not** be given. Your CELLULAR PHONES, INTERNET ACCESSIBLE WATCHES, PROGRAMMABLE/INTERNET ACCESSIBLE CALCULATORS, AND NOTES ARE NOT ALLOWED. You are allowed a periodic table, blank scratch paper, a writing utensil, and a non-programmable calculator. Hint: do all the homework at the end of each assigned chapter. The student may only take each exam once. Each exam needs to be taken before 11:59 p.m. of the due date.

When taking an online exam, follow these guidelines:

- Ensure you're in a location where you won't be interrupted
- Turn off all other devices (e.g. tablets, phones, second computers) and place them outside of your reach
- Before starting the test, know how much time is available for it, and also that you've allotted sufficient time to complete it
- Clear your desk or workspace of all external materials not permitted – **You are only allowed a periodic table, blank scratch paper, a writing utensil, and a calculator.**
- Remain at your computer for the duration of the test
- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam
- To produce a good webcam video, do the following:
 - Avoid wearing baseball caps or hats with brims
 - Ensure your computer or device is on a firm surface (a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) are likely to move
 - If using a built-in webcam, avoid readjusting the tilt of the screen after the webcam setup is complete
 - Take the exam in a well-lit room, but avoid backlighting (such as sitting with your back to a window)
- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted

DISCUSSION (10%):

Threaded discussions are an integral part of this course and simulate traditional classroom discussions. A threaded discussion allows each student to post comments to a discussion topic, react to other students' comments, and respond to ideas shared by you or by others in the course. The threaded discussions truly "belong" to the class.

Discussions take place asynchronously - each threaded discussion begins with a topic identified by the instructor. Students log into the course when they can and then post to the threaded discussion at their convenience. Responses to each topic display below the topic. Students usually enjoy using the threaded discussions because they can compose their thoughts before they post a comment, respond more thoughtfully to discussion topics, and engage in lively debates that are less

threatening than in a live classroom environment.

The instructor will post an original thread and each student is expected to contribute to the discussion. Contributions should consist of one original statement or comment and two peer responses to other student's comments. Comments such as "I agree with that" without any substantiation will not be acceptable.

Post a minimum of **three** college level QUALITY responses for full-credit. Please post your threads by 11:59 p.m. of the due date.

FINAL EXAM (20%):

The cumulative final examination will consist 70 multiple choice questions. The learner is expected to understand all course information before the online test is accessed. You will have 180 minutes to complete the exam. **The exam will require that you use LockDown Browser and a Webcam while taking the exam.** CELLULAR PHONES, INTERNET ACCESSABLE WATCHES, PROGRAMMABLE/INTERNET ACCESSABLE CALCULATORS, AND NOTES ARE NOT ALLOWED. Please note that all students are required to take the final (no student can be exempted). You are allowed a periodic table, blank scratch paper, a writing utensil, and a non-programmable calculator. The student may only take the exam once. The exam needs to be taken before 11:59 p.m. of the due date.

LAB GRADE (20%):

The lab reports, including the pre- and post- lab questions, are graded on the basis of completeness, neatness, and the correctness of the calculations tied to the experimental results.

LABORATORY GUIDELINES:

Late Assignments: Lab reports and worksheets will only be accepted if turned in on or before the due date. Late work is will not be accepted.

Disclaimer: Although much thought and effort has gone into the construction of this syllabus, **changes** may be necessary. If changes are made to anything in the syllabus they will be announced in class and/or lab or via email.

GUIDELINES FOR LABORATORY REPORTS:

The laboratory exercises will be provided in the online classroom. Each report will be graded on a 10-point basis. The data and instructions will be provided online. Submit your lab reports electronically through the online classroom. You must write and turn in your own report/worksheet that is **written in your own words and shows all work and calculations.**

The grade for missed lab activities is zero. **Missed labs cannot be made up.**

Determination of Course Grade/Detailed Grading Formula: Your grade for the course is determined by the scores that you earn on the assignments and assessments. The points you earn for this course are the weighted sum of the grading categories.

Grading:

Homework

10%

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Five Regular Exams

	40%
Discussion	10%
Lab Grade	20%
Final Exam	20%
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Total	100%

Grading Scale: The table contains the grading scale applied to the points calculation previously described.

FN — An F_N 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.

Letter Grade	Final Average
A	90 – 100
B	80 – 89.99
C	70 – 79.99
D	60 – 69.99
F	< 59.99

Late Work Policy: Late work is not accepted in this class. No extra credit is offered in this class.

Lab Science Policy: This course consists of both a lecture and laboratory grade component. Students must earn a 70% or better in the laboratory component to successfully pass the course. Earning less than 70% in the laboratory component will result in an F for the course regardless of the lecture grade. Passing the laboratory component and failing the lecture component will not guarantee a passing grade for the course. Deviations from this policy will be at the sole discretion of the instructor.

Attendance Policy: All students registered in this class are expected to attend all face-to-face sessions, to log in to this course at least twice each week, to participate in the class during those online sessions, and to follow the same attendance policy as the traditional classes offered on campus. This policy follows the attendance policies prescribed in the current College Catalog (<http://coursecatalog.com.edu/>).

Each student must successfully attend and complete 70% or more of all laboratory assignments to pass the laboratory portion. Failure to attend and complete 70% or more of the laboratory assignments will

result in a failing laboratory grade and a failing grade for the course.

Failing to attend class, 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 Blackboard 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 Blackboard for a one-week period, failure to submit four or more assignments by the deadlines for those assignments, failure to attend and complete the scheduled safety lab, failure to attend/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). Let's say a student may log into the course multiple times a week but fails to complete or attempt the course evaluations. Since they have failed to demonstrate knowledge of the material through evaluation, this student has demonstrated poor progress towards obtaining the course objectives. Other scenarios include a student that has missed the safety lab or that is attending (completing) less than 70% of the lab sessions. Since they have failed to learn lab safety protocols or has failed to attempt lab procedures evaluated through the performance lab procedure, this student has demonstrated poor progress towards obtaining the course objectives. In both cases, the student may be administratively withdrawn from the course. An administrative withdrawal for insufficient progress is solely at the discretion of your Instructor.

Tardiness Policy: Tardiness applies to the classroom meeting and not to logging into the content management system for online learning. Students that arrive after the start of class are responsible for the material that they missed during their absence. Upon arriving to class, tardy students are expected to discretely join the class in progress. Students that repeatedly arrive late and disrupt the class upon their arrival will be held accountable according to college policy. The very point of the online access is to allow students to access course materials and selected evaluations at their convenience within the time frame scheduled for completing the course work as set by the instructor. If you are late for using on-campus computers, you only penalize yourself by possibly having insufficient time to complete or being unable to start the assignment before the Testing Center, the Innovations Computer Lab, or the Library closes for the day.

Classroom Conduct Policy: College of the Mainland requires that students enrolled at COM be familiar with the Standards of Student Conduct, which can be found in the on-line Student Handbook. <https://www.com.edu/student-services/student-handbook>. Students are expected to be familiar with and abide by the Student Code of Conduct. During lab sessions, students are required to follow the COM Chemistry Lab Safety Guidelines as agreed upon completion of the Safety Lab. Any violations of the Code of Conduct will result in a referral to the Dean of Students and may result in dismissal from this class.

Technology Outage: Students are responsible for maintaining their hardware, software, and Internet connection to the course. If you are incapable of maintaining your own system, please use the computers available on campus or take the CL section of the course. (NB, Access to college computers is limited by the hours of operation for the computer labs and library. You are responsible for staying abreast of

these times.). No additional time will be provided for hardware, software, or Internet connection problems that interfere with your ability to access the course and complete your assignments and assessments.

If a verifiable interruption in the access to the Course Management System that lasts for fifteen minutes or longer and occurs within twenty-four hours of an assignment or assessment, the deadline for the assignment or assessment may be extended 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 outside of class is by email. Please use your @com.edu email address. Expect that mails from other sources will be filtered from my inbox and you will receive no reply. If you prefer to meet with me in-person or virtually outside my office hours, please make an appointment.

I will strive to reply to emails from @com.edu addresses and questions from forum posts, which are made on weekdays, within twenty-four hours. Expect that I will be unavailable on weekends. 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. So, if you don't mind waiting an extended time for my reply, leaving a voice message is another option.

Student Learner Outcome	Maps to Core Objective	Assessed via this Assignment
1. Identify and express the terminology used in chemistry, the nomenclature of inorganic and selected organic substances, and the physical and chemical properties of inorganic and selected organic substances.	Communication Skills Critical Thinking	Presentation Selected Test or Exam Questions
2. Recognize the fundamental facts, principles, theories, laws, and concepts necessary for further studies in science and related subjects.	Critical Thinking	Selected Test or Exam Questions
3. Categorize the structure, states, and physical and chemical properties of matter.	Critical Thinking	Selected Test or Exam Questions
4. Solve basic chemistry problems, conversions, and calculations	Empirical and Quantitative Skills	Selected Test or Exam Questions
5. Demonstrate proper safety techniques and locate needed safety information.	Critical Thinking Skills	Experiment 1 Grade Lab Average

6. Perform laboratory procedures by working cooperatively with classmates in a lab group to properly manipulate the laboratory equipment, to properly handle chemicals, to clearly record data, to perform needed calculations, and to submit completed work by the assigned deadline.	Teamwork	Lab Average
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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 409-9338330/sabernathy@com.edu.

Course outline: Use this course outline and tentative class schedule to schedule your course activities for the semester. The following designations are used to indicate time periods and deadlines:

Academic Schedule and Laboratory Activities

1/23	Introduction, Syllabus Review, D2L Review Chapter 1: The Chemical World Unit 1 Discussion DUE 1/30 Unit 1 Homework DUE 1/30
1/30	Chapter 2: Measurements and Problem Lab: in class exercise working with Measurements Unit 2 Discussion DUE 2/6 Unit 2 Homework DUE 2/6
2/6	Chapter 3: Matter and Energy Unit 3 Discussion DUE 2/13 Experiment 1 – Safety Lab (Video and Question Sheet) DUE 2/13 Exam I (Ch 1-3) DUE 2/13

	Unit 3 Homework DUE 2/13
2/13	Chapter 4: Atoms and Elements Unit 4 Discussion DUE 2/20 Experiment 2 – The Balance DUE 2/20 Unit 4 Homework DUE 2/20
2/20	Chapter 5: Molecules and Compounds Unit 5 Discussion DUE 2/27 Experiment 3 – Density DUE 2/27 Exam II (Ch 4&5) DUE 2/27 Unit 5 Homework DUE 2/27
2/27	Chapter 6: Chemical Composition Unit 6 Discussion DUE 3/6 Experiment 4 – Nomenclature DUE 3/6 Unit 6 Homework DUE 3/6
3/6	Chapter 7: Chemical Reactions Unit 7 Discussion DUE 3/13 Experiment 5 – Trends in the Periodic Table DUE 3/13 Unit 7 Homework DUE 3/13
3/13	Chapter 8: Quantities in Chemical Reactions Unit 8 Discussion DUE 3/20 Lab – in class exercise

	Exam III (Ch 6-8) DUE 3/20 Unit 8 Homework DUE 3/20
3/20	Chapter 9: Electrons in Atoms and Periodic Table Chapter 10: Chemical Bonding Unit 9 Discussion DUE 3/27 Unit 10 Discussion DUE 3/27 Experiment 6 - Table Salt from Baking Soda DUE 3/27 Unit 9 Homework DUE 3/27 Unit 10 Homework DUE 3/27
3/27	Chapter 11: Gases Unit 11 Discussion DUE 4/3 Experiment 7 – Percentage of Water in a Hydrate Due 4/3 Exam IV (Ch 9-11) DUE 4/3 Unit 11 Homework DUE 4/3
4/3	Chapter 12: Liquids, Solids, and Intermolecular Forces Chapter 13: Solutions Unit 12 Discussion DUE 4/10 Unit 13 Discussion DUE 4/10 Experiment 8 – Lewis Structures & Shapes of Molecules and Ions DUE 4/10 Unit 12 Homework DUE 4/10 Unit 13 Homework DUE 4/10
4/10	Chapter 14: Acids and Bases Unit 14 Discussion DUE 4/17

	<p>Experiment 9 – The Effect of Temperature on Solubility DUE 4/17</p> <p>Exam V (Ch 12-14) Due 4/17</p> <p>Unit 14 Homework DUE 4/17</p>
4/17	<p>Chapter 17: Radioactivity and Nuclear Chemistry</p> <p>Chapter 18: Organic Chemistry Part 1</p> <p>Unit 17 Discussion DUE 4/27</p> <p>Experiment 10 – Titration of Vinegar DUE 4/27</p> <p>Unit 17 Homework DUE 4/27</p>
4/27	<p>Chapter 18: Organic Chemistry Part 2</p> <p>Chapter 19: Biochemistry</p> <p>Unit 18 Discussion DUE 5/1</p> <p>Unit 19 Discussion DUE 5/1</p> <p>Lab - Organic worksheets in-class exercise</p> <p>Unit 18 Homework DUE 5/1</p> <p>Unit 19 Homework DUE 5/1</p>
5/1	Dead Week – No Class
5/8	Final Exam available 5/8. Due midnight 5/8.

*Please bear in mind the schedule is tentative and subject to modification.

Institutional Policies and Guidelines

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

Student_Handbook_2022-2023_v4.pdf (com.edu). 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 March 1. The last date to withdraw from the 16-week session is April 24. The last date to withdraw for the 2nd 8-week session is May 3.

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.

Back Matter

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Revisions: Your instructor reserves the right to revise this syllabus to accommodate changes in the course that may occur during the semester. If any changes to this syllabus occur during the semester, students will be provided with an announcement of those changes and will be given access to a description of those changes.

Acknowledgements: This syllabus was developed using a template provided by COM. Other parts of this syllabus were derived from the work of my professors and my colleagues. I thank them for their willingness to share their work.