Course Number and Section (CHEM 1405-222C3)
Introduction to Chemistry (PTEC/OSHT)(030) – Fall 2025
Tuesday & Thursday – 6:00 to 8:50 in STEM 403

Instructor Information:

Abdul Waheed, PhD
Office: STEM 323
Email: awaheed@com.edu
Phone: 346-479-3724

Office hours and location:

Monday & Wednesday from 6:00 PM to 8:00 PM virtual (Microsoft Teams)
Tuesday & Thursday from 9:00 PM to 9:30 PM in STEM 323
By appointment, in person, or virtual (Microsoft Teams)

Required Textbook/Materials:

The textbook and homework system are part of the inclusive access and are available immediately upon access to Brightspace D2L at the start of the semester

Required Textbook:

Chemistry for Changing Times (Hill and McCreary) - Chemistry LibreTexts

The textbook for this class is immediately available for free online! The entire textbook and individual chapters are posted in the course shell on D2L. Alternatively, follow the link above to access the textbook.

Course Description:

This course is an introduction to the language, techniques, methods and principles of chemistry primarily for chemical and refinery plant operators and technicians. Topics include measurements and conversion, basic atomic structure and periodic trends, basic molecular structure, inorganic and organic nomenclature, and organic functional groups. The states of matter, behavior of solids, liquids and gases, and the properties of solutions and solubility are addressed, especially as they relate to organic functional groups and molecular structure. The chemical properties of selected functional groups are described in the context of elementary stoichiometry, kinetics, equilibrium, acidity and alkalinity, and oxidation/reduction.

Course requirements: (including description of any special projects or assignments)

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 Sapling Learning, from the Internet, from the library, and from other resources, as needed.

Stay in Communication: You will maintain communication with your classmates and instructors, as needed**.** Typical methods for communicating include interpersonal communication, email, text messaging, instant messaging, and discussion forum postings.

Complete Assessments: Your knowledge of the material covered in the Student Learner Outcomes is assessed using Now You Try It, online homework, exams, and laboratory experiments.

Determination of Course Grade

- Quizzes – 10.0 %
- Chapter Homework Assignments – 20.0 %
- Semester Exams – 30.0 %
- Final Comprehensive Exam – 20.0 %
- Laboratory Grade – 20.0

Detailed Grading Formula:

Your grade for the course is determined by the scores that you earn on the assignments and assessments. Your final grade is then calculated as a weighted average of the points earned in each category. (The determination of final grades may be altered for an entire class section upon the discretion of the instructor.) As of the posting date of this document, the grade assigned will be calculated in the following manner: Any modifications to the determination of grades will be announced and will be at the sole discretion of the instructor.

Quizzes: During class, relevant questions about either previous or current information will be presented. These questions may involve writing some type of explanation, categorization, or mathematical problems. These assignments will be due by the end of that day's class period.

- Students must attend class to complete the assignment for a score.
- Each quiz is worth a maximum of 10 points.
- The lowest quiz score will be dropped.
- The percentage is then scaled to 100 points. (10.0 % of overall grade)

Chapter Homework Assignments: There will be Chapter Homework Assignments given during the semester. The Chapter Homework Assignments, designed and administered to promote mastery of the selected Student Learner Outcomes, are given online through Achieve Macmillan Learning. These open book assignments allow you to reference your course materials and Internet resources during the assessment.

Once started, you will have until the deadline to complete and submit your attempt. The system is an adaptive learning module that allows for multiple attempts and is designed to help you master the

concepts and calculations of the material. The purpose of allowing the additional attempts while answering the questions is to promote mastery of the material. By learning from mistakes made during the initial attempt you will have an opportunity to correct misconceptions and demonstrate mastery of the material. This will also help prepare you for the exams.
The assignments are composed of calculation, matching, multiple choice, and true/false questions.

The topics for the assignments correspond to the Chapter topics:

- Chapter 1 Essential Ideas
- Chapter 2 Atoms
- Chapter 3 Atomic Structure
- Chapter 4 Chemical Bonds
- Chapter 5 Chemical Accounting
- Chapter 6 Gases, Liquids, Solids, and Intermolecular Forces
- Chapter 7 Acids and Bases
- Chapter 11 Nuclear Chemistry
- Chapter 8 Oxidation - Reduction

- Each assignment is worth a maximum of 20 points.
- The lowest homework assignment will be dropped.
- The percentage is then scaled to 200 points. (20.0 % of overall grade)

Late Work, Make-Up, and Extra-Credit Policy:

Late Work: This course is designed to accommodate students who may have some emergencies by providing extended deadlines for various assignments. After the initial due date, there may be an extended deadline to submit your assessment or assignment. After the extended deadline, the assignment or assessment is closed to submission and no additional time will be provided.

Make-up: Generally, no make-up of missed assignments, labs, or tests are provided. Exceptions might be allowed upon the discretion of the instructor.

Extra-Credit: A few opportunities will be provided during the semester. Extra credit points are added to the overall total of points

Attendance Policy:
All registered students are expected to attend all scheduled class meetings, especially the laboratory meetings. This policy follows the attendance policies prescribed in the current College Catalog (http://coursecatalog.com.edu/).

Students must earn 70% or better in the laboratory component to successfully pass the course. Additionally, students must attend and complete 70% or more of all laboratory assignments to successfully pass the course.

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. (Faculty may add additional statements requiring monitoring and communication expectations via D2L or other LMS)

Student Learner Outcome	**Maps to Core Objective**	**Assessed via this Assignment**
1.Define the fundamental properties of matter	CT	Selected Exam Questions
2.classify matter, compounds, and chemical reactions	CT	Selected Exam Questions
3. Determine the basic nuclear and electronic structure of atoms.	CT CS	Selected Exam Questions
4. Identify trends in chemical and physical properties of the elements using the Periodic Table	CT	Selected Exam Questions
5. Describe the bonding in and the shape of simple molecules and ions.	CT	Selected Exam Questions
6. Solve stoichiometric problems.	EQS	Selected Exam Questions
7. Write chemical formulas	CT	Selected Exam Questions
8. Write and balance equations	CT	Selected Exam Questions
9. Use the rules of nomenclature to name chemical compounds.	CT	Selected Exam Questions
10. Define the types and characteristics of chemical reactions.	CT	Selected Exam Questions
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems	EQS	Selected Exam Questions
12. Determine the role of energy in physical changes and chemical reactions	CT	Selected Exam Questions
13. Convert units of measure and demonstrate dimensional analysis skills	EQS	Selected Exam Questions
14. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory	TW	Selected Experiment Grades
15. Demonstrate safe and proper handling of laboratory equipment and chemicals	CT	Selected Experiment Grades
16. Conduct basic laboratory experiments with proper laboratory techniques	TW	Selected Experiment Grades
17. Make careful and accurate experimental observations	EQS	Selected Experiment Grades
18. Relate physical observations and measurements to theoretical principles	EQS	Selected Experiment Grades
19. Interpret laboratory results and experimental data, and reach logical conclusions	CT	Selected Experiment Grades

20. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports	CS	Lab Report Grade
21. Design fundamental experiments involving principles of chemistry.	CT	Selected Experiment Grades
22. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.	CT	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	TW	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.

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/ Email: sabernathy@com.edu

Course outline:

Week	Topics	Reading Assignments
1	• Course Intro • Achieve Macmillan Learning • Chap 1	Syllabus Archive Access Directions Chap 1
2	• Chap 1 → Chemistry • Chap 2 → Atoms (Contd.) • *Lab 1: Introduction to the Chemistry Lab*	Chap 1 & 2 Experiment 1
3	• Chap → 2 Atoms • *Lab 2: Measurements and Graphing*	Chap 2 Experiment 2
4	• Chap 3 → Atomic Structure (Contd.) • *Lab 3: Identification of White Solids*	Chap 3 Atomic Structures Experiment 3
5	• CH 3 → Atomic Structure • CH 4 → Chemical Bonds (Contd.) • **Exam 1–on lab day (CH 1-3)** • *Lab 4: Periodic Table (on-line*	Chap 4 Chemical Bonds **Exam 1** Experiment 4

6	• Chap 4 → Chemical Bonds • Chap 6 → Gases, Liquids and Intermolecular Forces (Contd.) • *Lab 5: Spectroscopy/Spectral Lines*	CH 4 & CH 6 Experiment 5
7	• Chap 6 → Gases, Liquids and Intermolecular Forces • *Lab 6: Lewis Structures & the Shapes of Molecules*	Chap 6 Experiment 6
8	• Chap 5 → Chemical Accounting (Contd.) • Lab 7: Chemical Accounting	Chap → 5 Experiment 7
9	• Chap → 5 Chemical Accounting • Chap → 6 (6.5 – 6.7) Gases, Liquids, Solids, and Intermolecular Forces • **Exam 2 – on lab day (CH 4, CH 6 (6.1 – 6.4), and CH 5)** • *Lab 8: Types of Chemical Reactions (on-line)*	CH 5 & CH 6 (6.5–6.7) **Exam 2** Experiment 8
10	• CH 6 (6.5 – 6.7) Gases, Liquids, Solids, and Intermolecular Forces • *Lab 9: Stoichiometry*	CH 6 (6.5 – 6.7) & CH 7 Experiment 9
11	• CH 7 Acids and Bases • *Lab 10: Gas Laws*	CH 7 Experiment 10
12	• CH 7 Acid and Base • *Lab 11: Concepts of Strength and Concentration (on-line)* • *Lab 12: Acidity and Alkalinity of Household Chemicals*	CH 7 and CH 8 Experiment 13 Experiment 14
13	• CH 11 Nuclear Chemistry • *Lab 13: Simulation of Nuclear Decay (on-line)* • *Lab 14: Evaluating Electrochemical Cells*	CH 11 & 8 Experiment 13 Experiment 14
14	• CH 8 Oxidation and Reduction • **Exam 3 – on lab day (CH 6 (6.5 – 6.7), 7, 11 & 8)**	CH 8 **Exam 3**
15	• Review for Final Comprehensive Exam	
16	• **Final Comprehensive Exam** on Scheduled Lecture Day	**Final 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/student-handbook.html**.** *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 with 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 accommodation is requested to contact:
Kimberly Lachney, Student Accessibility Services Coordinator
Phone: 409-933-8919
Email: AccessibilityServices@com.edu
Location: COM Doyle Family Administration Building, 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 1. The last date to withdraw from the 16-week session is November 14. The last date to withdraw for the 2nd 8-week session is November 25.

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.

Nondiscrimination Statement:
The College District prohibits discrimination, including harassment, against any individual on the basis of race, color, religion, national origin, age, veteran status, disability, sex, sexual orientation, gender (including gender identity and gender expression), or any other basis prohibited by law. Retaliation against anyone involved in the complaint process is a violation of College District policy.