



WACO, TEXAS

COURSE SYLLABUS

AND

INSTRUCTOR PLAN

CHEM_1409 General Chemistry for Engineering Majors

CHEM 1409_02

Larry D. Benton

NOTE: This is a 16-week course.

COVID 19 Notice:

McLennan Community College is committed to providing you with every resource you need to reach your academic goals including your safety. We will continue to monitor the evolving situation with COVID 19 and adjust our safety guidelines to make sure we offer a safe environment for you and our faculty. Please make sure to consult your faculty and the MCC website at <https://www.mclennan.edu/crisis-management/coronavirus-updates/index.html> on any changes to these guidelines.

Course Description:

Fundamental principles of chemistry for engineering majors. 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. Also covered, will be chemical equilibrium, phase diagrams and spectrometry, acid-base concepts, thermodynamics, kinetics, electrochemistry, nuclear chemistry, an introduction to organic chemistry and descriptive inorganic chemistry. Basic laboratory experiments supporting theoretical principles; introduction of scientific method, experimental design, data collection and analysis, and preparation of laboratory reports.

Prerequisites and/or Corequisites:

Prerequisites: MATH 1314 with a minimum grade of C or equivalent preparation.

Course Notes and Instructor Recommendations:

In order to excel in this class, expect to spend 5 to 6 hours per week at a minimum completing homework assignments, and reviewing material covered in the lectures associated with this class. Lab work will require the student reviewing the lab manual instructions for the lab prior to attending the lab. PowerPoint presentations and additional study aids for will available on Bright Space for the students review as well. The textbook is required for this class. In the event that the class is closed due to the pandemic, class will continue to meet via Zoom at the regular scheduled class meeting times.

Instructor Information:

Instructor Name:

MCC Email:

Office Phone Number:

Office Location:

Office/Teacher Conference Hours:

Other Instruction Information:

Required Text & Materials:

Title: Chemistry: Molecular Nature of Matter & Change

Author: Silberburg

Edition: 9th Edition

Publisher: McGraw-Hill

ISBN: 9781264161447

MCC Bookstore Website: <http://www.mclennan.edu/bookstore/>

A laboratory notebook and safety goggles, both available at the bookstore are required. An alternative for safety goggles, that many students have found to be very comfortable, is the Uvex Stealth OTG Safety Goggles that can be purchased from major online sites.

Methods of Teaching and Learning:

This class consists of one and a half hours twice a week of solving problems and discussing chemical concepts during the lecture time from the assigned chapter and 3 hours per week of laboratory experimentation. Additional course subject matter will be available on Bright Space that the student will be responsible to know. The lecture portion of the class will be problems worked on the whiteboard, and open discussion. The student is expected to study the PowerPoint presentations for each chapter and read the assigned chapter in the book. Problems worked will be real world chemical problems that are solved using algebra to find absolute solutions. The student is expected to be capable of using algebraic methods to solve mathematical problems.

The laboratory portion of the class is conducted with each student experiencing hands on experimentation in the lab. The student's review of the lab experiment prior to execution will enhance the learning experience. Students may be required to work individually or in groups. Learning to work cooperatively in the laboratory setting is an important aspect of the lab. Documentation of the work performed in the lab will be recorded in Laboratory Notebooks and Lab Reports will be written from the data collected in the Laboratory Notebooks. All data will be recorded in the Laboratory Notebooks in black ink.

Course Objectives and/or Competencies:

Critical Thinking: Students' critical thinking abilities will be assessed through written lecture exams and/or lab reports.

Communication: Students will be required to research a topic relevant to the semester's coursework for discussion on the discussion board in Bright Space. Communication is also evaluated through testing, reporting of lab results and embedded research projects that require formalized reports.

Empirical/Quantitative: Students will be required to perform chemistry calculations on lecture exams and during weekly lab experiments and exercises. Emphasis is given to mathematical descriptions of the topics covered since this course is focused on the science student. Students are required to collect data and determine the implications the collected data set has in relation to the environment and the world around them.

Teamwork: Students will work in teams for each laboratory exercise. Each member of the team will carry some responsibility for data collection and/or interpretation.

Learning Outcomes:

Lecture

Upon successful completion of this course, students will:

1. Define the fundamental properties of matter.
2. Classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.
5. Describe the bonding in and the shape of simple molecules and ions.
6. Solve stoichiometric problems.
7. Write chemical formulas.
8. Write and balance equations.
9. Use the rules of nomenclature to name chemical compounds.
10. Define the types and characteristics of chemical reactions.
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
12. Determine the role of energy in physical changes and chemical reactions.
13. Convert units of measure and demonstrate dimensional analysis skills.
14. Demonstrate an understanding of chemical kinetics and equilibrium systems.

Laboratory

Upon successful completion of this course, students will:

1. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
2. Demonstrate safe and proper handling of laboratory equipment and chemicals.
3. Conduct basic laboratory experiments with proper laboratory techniques.
4. Make careful and accurate experimental observations.
5. Relate physical observations and measurements to theoretical principles.
6. Interpret laboratory results and experimental data, and reach logical conclusions.
7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
8. Design fundamental experiments involving principles of chemistry.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Course Outline or Schedule:

Week 1 Introduction to class, Chapter 1

Week 2 Chapter 2

Week 3 Chapter 3

Week 4 Test 1

Week 5 Chapter 4 & 5

Week 6 Chapter 6 & 20

Week 7 Chapter 7, 8 & 9

Week 8 Chapter 10, & 11, Test 2

Week 9 Chapter 12 , & 13

Week 10 Chapter 14 Test 3

Week 11 Chapter 16, & 17

Week 12 Chapter 18, Test 4

Week 13 Chapter 21, & 22

Week 14 Chapter 24

Week 15** Test 3, Make Up Exam

Week 16 Final Exam

** - After Nov. 28 Laboratory Notebooks and Lab Reports will not be accepted.

This schedule is subject to change. You will be informed of any changes to the syllabus by email, Bright Space or class announcements.

Course Grading Information:

Your course grade will be based on the points received from the exams, the final, the lab grades, class participation (attendance and involvement in class) and the periodic exercise problems. There will be three (3) 100-point exams. A single make-up exam will be offered for the chapter exams as scheduled. A time and day will be scheduled prior to the end of the semester for all students who missed a test to take the makeup exam. The exam will be comprehensive up to that point in the course. The final will be a 100 point comprehensive final and will be given on the final exam date. There will not be a makeup test for the final exams. There will be homework exercise problems to be turned in and graded. Ten labs will be given with the lab report to be turned in 7 days after performing the lab. Your grade will be calculated using the following breakdown:

Chapter exams	40%
Lab Notebook	10%
Lab grades	20%
Homework Exercises	15%
Final	15%

Your course letter grade will be based on the following scale: 90% or more of the total points will guarantee a grade of "A"; 80% or more guarantees "B"; 70% or more guarantees "C"; 60% or more guarantees "D"; below 60% of the total may result in an "F".

Work that is not easily readable and meets English grammatical standards will not be graded. Mathematical solutions must be written in an easily followed "proof" format and should be appropriately commented.

Late Work, Attendance, and Make Up Work Policies:

Lab worksheets are due by the start of the next week's lab. Make up labs are NOT offered. One make up exam is offered at the end of the semester. The makeup exam will be a comprehensive exam of the material covered in the semester. Students are responsible for identifying each paper turned in with their name in the upper margin of each page. Papers that are turned in without names or pages from work turned without names are discarded. Work that is not legible will not be graded and a zero will be recorded for that assignment. Proper grammar and punctuation is required for answers to essay questions. Proper format using a mathematical proof style is required for math related problems.

The laboratory manual has a pre-lab assignment which is to be completed prior to the students' lab period. Failure to complete the pre-lab may result in the student not being allowed into the

lab to perform the lab experiment and will result in the student not getting a grade for that lab. It is of utmost importance that the student thoroughly reads and studies the lab experiment prior to attempting to execute the experiment. Inherent hazards associated with working in a laboratory setting can be minimized by studying the experiment before performing the experiment. Late work will not be accepted. Each assignment will have a due date attached to the assignment.

MCC attendance policy will be enforced. The student should be certain to use the link below to read the attendance policy, so the policy can be observed.

If there is any evidence of cheating on any homework, quiz, test, or final, you will receive a zero for that item and cannot make it up or replace it and it cannot be dropped. Tobacco and tobacco product use is prohibited inside college buildings. This includes smokeless products as well as cigarettes, pipes, and cigars.

Safety equipment must be worn at all times: long pants/skirt (covering at least the top half of the calf), apron or lab coat, hair back, safety goggles, and, if necessary, gloves. No open-toed shoes, shoes with holes in them, shoes that leave the top of the foot exposed, hats of any sort, shorts, food or drink are allowed. Anyone acting in an unsafe manner will be warned once. If seen without safety equipment or acting improperly a second time, they will be asked to leave the laboratory. They will be allowed to return in 30 minutes to finish their work, if they can. If they are asked to leave more than once for any given experiment, they will receive a zero for that experiment's lab report. Safety is the MOST important part of lab. Students must abide by the general safety regulations as described in the chemistry 1411 laboratory manual.

Please read and abide to the General Conduct Policy in the Highlander Guide.

Student Behavioral Expectations or Conduct Policy:

Students are expected to be on time for class and labs. Lectures will start on time. At the completion of each lab experiment, the workspace in the lab is required to be clean and tidy. Wear appropriate clothing to work in a lab environment. That consist of closed toed shoes (preferable leather) and goggles for PPE (Personal Protective Equipment).

[Click Here for the MCC Attendance/Absences Policy](https://www.mclennan.edu/highlander-guide/policies.html)

(<https://www.mclennan.edu/highlander-guide/policies.html>)

Click on the link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.



ACADEMIC RESOURCES/POLICIES

Accommodations/ADA Statement:

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit www.mclennan.edu/disability.

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

disabilities@mclennan.edu

254-299-8122

Room 319, Student Services Center

Title IX:

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the Title IX Coordinator at titleix@mclennan.edu or by calling Dr. Drew Canham (Chief of Staff for Diversity, Equity & Inclusion/Title IX) at (254) 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC at (254) 299-8210. The MCC Student Counseling Center is a confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>.

Go to McLennan's Title IX webpage at www.mclennan.edu/titleix/. It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

Student Support/Resources:

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact a Success Coach by calling (254) 299-8226 or emailing SuccessCoach@mclennan.edu. Students may visit the Completion Center Monday-Friday from 8 a.m.-5 p.m. to schedule a meeting with a Success Coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff based on household size. Text (254) 870-7573 to schedule a pantry appointment. The Completion Center and pantry are located on the Second Floor of the Student Services Center (SSC).

MCC Foundation Emergency Grant Fund:

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to <https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html> to find out more about the emergency grant. The application can be found at https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf.

MCC Academic Integrity Statement:

Go to www.mclennan.edu/academic-integrity for information about academic integrity, dishonesty, and cheating.

Minimum System Requirements to Utilize MCC's D2L|Brightspace:

Go to <https://www.mclennan.edu/center-for-teaching-and-learning/Faculty-and-Staff-Commons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

Minimum Technical Skills:

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

Backup Plan for Technology:

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

Email Policy:

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are expected to read and, if needed, respond in a timely manner to college emails. For more information about your student email account, go to www.mclennan.edu/student-email.

Instructional Uses of Email:

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

Email on Mobile Devices:

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email Helpdesk@mclennan.edu for help.

You can find help on the McLennan website about connecting your McLennan email account to your mobile device:

- [Email Setup for iPhones and iPads](https://support.microsoft.com/en-us/office/set-up-an-outlook-account-in-the-ios-mail-app-b2de2161-cc1d-49ef-9ef9-81acd1c8e234?ui=en-us&rs=en-us&ad=us) (<https://support.microsoft.com/en-us/office/set-up-an-outlook-account-in-the-ios-mail-app-b2de2161-cc1d-49ef-9ef9-81acd1c8e234?ui=en-us&rs=en-us&ad=us>)
- [Email Setup for Androids](https://support.microsoft.com/en-us/office/set-up-email-in-android-email-app-71147974-7aca-491b-978a-ab15e360434c?ui=en-us&rs=en-us&ad=us) (<https://support.microsoft.com/en-us/office/set-up-email-in-android-email-app-71147974-7aca-491b-978a-ab15e360434c?ui=en-us&rs=en-us&ad=us>)

Forwarding Emails:

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

For more helpful information about technology at MCC, go to [MCC's Tech Support Cheat Sheet](#) or email helpdesk@mclennan.edu.

Disclaimer:

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.