



NORTHEAST TEXAS
COMMUNITY COLLEGE

CHEM 1411.001 General Chemistry I

Course Syllabus: Spring 2021

"Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed."

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	Monday	Tuesday	Wednesday	Thursday	Friday
via Zoom	930-1050am 700-800pm		930-1050	700-800pm	1100-1220
on Campus		1100-1220		1100-1220	

Other times available by appointment.

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities. Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.

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 introductions to thermodynamics, quantum mechanics, and descriptive chemistry.

Successful completion (final grade of C or better) of CHEM 1411 will allow the student to continue on to CHEM 1412.

This course consists of both lecture (3 hours) and laboratory (3 hours) each week.

- *Prerequisite(s):* MATH 1314, equivalent or above

Course Structure and Overview:

- Course Format: Synchronous Lecture
 - *NTCC Definitions* – Synchronous classes will connect the instructor and the student in a virtual classroom where the student will receive live instruction and be able to interact directly with the faculty member during the course's class time.
 - *What this means for you* – Lectures in this course will be conducted via Zoom. You are expected to be online in the Zoom classroom video chatting during the scheduled lecture times. Additional course material may also be presented fully online through the course Blackboard page. Most assignments - including exams - will be submitted electronically through blackboard.
- Course Format: Face-to-Face Laboratory
 - The laboratory portion of this course will be conducted in the traditional face-to-face format during the scheduled times as posted.
 - Contingencies are in place, should the lab need to transition to a virtual format. (see last page)
- Lecture Sessions: **Mondays & Wednesdays 1100am-1220pm**
 - The lecture portion of this course is in the partially-flipped style. Students are required to read assigned portion of the text before coming to class to prepare for that day's activity. Lecture will take approximately half of the class time, while the other half of the class time students will be working in small groups. Students will be required to work a paper quiz in small groups during each class period. Additionally, students are expected to work on assignments, reading, and studying a minimum of 3 hours outside of class for every one hour of class time.
 - Additional course material may also be presented fully online through the course Blackboard page.
 - Exams consist of multiple-choice questions, short answer questions, calculation problems, and essay questions. For more information about exams, see the syllabus section on exams.
 - Exams will be conducted on-campus in person during the time scheduled.

- Laboratory Sessions: **Mondays 300-550pm**
 - Detailed instructions, guidelines and descriptions of what is expected for laboratory sessions can be found on the following pages under the heading “Institutional/Course Policy”. The course Blackboard page contains detail about what will be conducted in the laboratory sessions, what laboratory assignments are due, due dates, and rubrics.

Required Instructional Materials:

- Due the on-going pandemic situation, face-coverings are required in this course. You should provide your own face-covering or mask. Your nose and mouth must be covered at all times while wearing the face covering. Your face covering must be worn during the entire time you are inside the Math/Science Building, including during lecture and laboratory settings and during office hours. There are no exceptions.
- Lecture Textbook
 - *Chemistry: Structure and Properties* – Tro; 2nd Edition
Digital Version with Access Code (ISBN # 9780134528229)
Publisher: Pearson
 - The required materials for the lecture portion of this course are available using INCLUSIVE ACCESS. This means that you paid a discounted price for the eText and Mastering Chemistry when you paid tuition for this course. You automatically have your access code for Mastering Chemistry.
 - A discounted physical textbook is also available at an additional cost once the semester is underway. If you would like a physical book, you can only purchase one at this discounted price through the NTCC College Store.
- Lab Supplies
 - *Lab Manual for CHEM 1411 – Experiments in General Chemistry I (v 4.0)*
NTCC Printing, only available in NTCC College Store
 - Lab Safety Personal Protective Equipment (PPE)
 - Approved safety glasses are available in the college store, and many safety glasses and safety goggles are also available from online retailers. Students who wear corrective-vision glasses must have elastic-strap safety goggles that cover the entire glasses and seal against the forehead. **Always check with your instructor before purchasing eye protection from somewhere other than The NTCC College Store.**
 - **Beginning Monday, February 15, students arriving to lab without proper safety glasses or goggles will not be allowed to participate in the experiment and will receive a grade of zero for that experiment.** Before that date, safety glasses/goggles may be rented from the instructor for the cost of five (5) points deducted from the behavior, safety, and teamwork (BST) grade.
- Scientific Calculator
A scientific calculator is required for this course. A model TI-30Xa or TI-36x Pro is suggested, but many models will work; check with your instructor. **You will NOT be allowed to use a graphing calculator, programmable calculator, or cell-phone calculator during any exam in this course.**
- Pencils and Erasers
Pencil is mandatory for writing on quizzes and exams. A strong, sturdy eraser is required to ensure that your work is professionally presentable. Any papers submitted in pen will not be graded and will receive a grade of zero. Any papers that are too sloppy, messy, or unreadable will incur severe point deduction or earn a grade of zero.

Minimum Technology Requirements:

- Scientific Calculator - TI-36x Pro and TI-30Xa are recommended (Graphing calculators are not allowed)
- Wireless Internet capable laptop computer or tablet (Chromebooks are not recommended)
- Video conferencing capability using Zoom through computer or mobile phone.
- Access to printer for required hand-written assignments.
- Access to a scanner for electronic submission of hand-written assignments. **NOTE: The CamScanner app on mobile devices is the best option for this. Hand-written assignments must be submitted in pdf format through Blackboard.**

Required Computer Literacy Skills:

- Web browsing skills for working with the online homework system
- Ability to use Blackboard for access to course information
- Competent and professional emailing skills
- Functional use of MS Word and Excel for writing lab reports
- Ability to print and scan documents for electronic submission of hand-written assignments.

Communications:

- The major communication pathway between instructors and students in this course is face-to-face during lecture and laboratory sessions and during office hours. Students are expected to ask questions and participate in discussions during lecture and laboratory sessions.
- NTCC email is the official form of communication used by the college. Email communications from non-NTCC email addresses will not be answered.
- Course announcements that occur outside of lecture and lab sessions will be announced via Blackboard's announcement feature. These will be cc'd to students via NTCC email.
- Students are expected to check Blackboard and their NTCC email accounts regularly.
- All grading policies and due dates for online homework assignments are listed in the online homework system.

Evaluation/Grading Policy:

- Course Grade Breakdown

○ Mastering Chemistry	10%
○ Assignments* & Attendance	15%
○ Regular Exams	20%
○ Midterm Exams	25%
○ Laboratory	25%
○ <u>ACS Final Exam</u>	<u>5%</u>
○ Total Course Grade	100%

** Assignments are anything assigned by the instructor that does not fit into any of the other categories.*
- Grading Scale

○ A = 100-90%	<i>Final course grades are rounded to the nearest whole number percent, and letter grades assigned using the grading scale.</i>
○ B = 89-80%	
○ C = 79-70%	
○ D = 69-60%	
○ F = 59-0%	
- Grades will be posted to Blackboard throughout the course. Blackboard provides an approximate course grade, which is typically within 1-3% of the actual course grade. The instructor's gradebook is the last word in grades and is what decides the final grades for the course. At any time during the term, students can request to view their grades in the instructor's gradebook or can request a pdf copy of their grades.
- *Questions about what score on the Final Exam is required to earn a particular grade in the course will not be answered. Please do not ask.*

Exams:

- Three regular exams will be given during the semester. Regular exams are administered on campus in the lecture classroom during the scheduled lecture time.

○ Exam 1	Monday, February 15
○ Exam 3	Monday, March 29
○ Exam 4	Wednesday, April 4
- Two cumulative midterm exams will be given during the semester. The midterm exams will be administered on campus in the lecture classroom during the scheduled lecture time. Midterm exams are entirely multiple choice and are machine graded via Scantron.

○ Midterm Exam 2	Monday, March 8
○ Midterm Exam 5	Wednesday, May 5
- Exam dates are subject to change, if circumstances dictate it. Ample notice will be given verbally during class, in such instances. Under some rare circumstances, students may take exams in advance; this will be decided on a case-by-case basis in advance of the exam date. **There will be no make-up exams for missed exams without authorization before the exam date.**
- ***The American Chemical Society (ACS) Standardized First-Semester General Chemistry Final Exam*** will be administered during the scheduled time according to the published Final Exam Schedule (also shown below). The ACS Exam is a nationally administered exam that covers topics from the first semester course in general chemistry. Questions on this exam will cover topics from all of CHEM 1411. This is a 70-question multiple choice exam with strict guidelines that will be discussed in class. This exam is challenging and will give students an idea as to how they perform relative to other students across

the nation (community college and university) that take this test.

- Monday, May 10 – 1200 noon (110 minutes)

- **Guidelines for in-person exams in this course:**

- During this pandemic time, face-coverings and social distancing will be required to take in-person exams in this course. Students' noses and mouths must be covered during the entire duration of the exam. Students will sit distanced from one another during the exam, and exam papers will be handed out and collected with as little contact as possible.
- At the instructor's discretion, students may be assigned seats during an exam period.
- Students are only allowed to bring pencils, erasers, and scientific calculators into the testing room.
- **Programmable calculators, graphing calculators, and cell-phone calculators are not allowed.** Sharing calculators will not be permitted.
- Bags, purses, etc. are not allowed at the student tables and should be stowed at the front of the room
- Cell phones are not permitted. Phones should be turned off and stowed in a bag or surrendered to the instructor during the exam. A student in possession of phone once the exam has started will earn a grade of zero on that exam. If a student's phone sounds, disrupting the exam, that student will earn a grade of zero on the exam and be asked to leave the testing room.
- Watches are not permitted in the exam room; watches, and other personal electronic devices, must be stowed in a bag.
- Students will be provided with scratch paper and a formula sheet for each exam. Other papers or notes will not be permitted during the exam.
- Students that leave the testing room during the exam must turn in the exam to be graded and cannot return to the exam room until the testing period is over.
- A student found in violation of any of these guidelines during an exam period will earn a grade of zero on that exam.

- **Graded Exams will not be handed back to the student.** Students are encouraged to review their graded exams with the instructor. Students can make an appointment to review their exams with the instructor.

Institutional/Course Policy:

- **Students are expected to be working on assignments outside of class on their own time throughout the entire duration of this course.** For each hour that you spend in class, plan to spend a minimum of three hours out of class studying, reading the book, working on homework problems, etc.

- Quizzes

- A quiz will be given during all lectures. Students who are absent from class will earn a zero on the quiz, and makeup quizzes will not be given.
- Quizzes that are not in the instructor's possession when they leave the classroom are considered late.
- Take Home Quizzes that are not in the instructor's possession at the start of the class are considered late.
- **Late quizzes are not accepted; you will earn a grade of zero.**
- In special cases, outside-of-class paper assignments may be accepted late; this requires prior authorization in advance of the due date.
- Electronic Assignment Submission and Electronic Documents
 - All hand-written quizzes must be submitted for grading electronically through Blackboard.
 - Papers must be submitted in pdf format. All materials must be a single pdf.
 - Printing a given pdf and scanning answers is the preferred method of working assignments.
 - Paper quizzes will be provided in addition to the pdf versions.
 - If a scanner is not available, there are free mobile phone applications available that can act as a scanner. The CamScanner app is the best option.
 - Typed lab assignments should be saved as pdf in MS Word – printing and scanning is not necessary.
 - Any materials that are submitted incorrectly will not be graded.
 - All handouts and "paper" assignments for this course will be provided electronically via Blackboard.
 - **Any quiz marked "Late" in the Blackboard system will earn a grade of zero.**

- Attendance

- Attendance is mandatory for this course. Points will be earned for attendance.
- Attendance is monitored through zoom. Students logged into the lecture on time and in the lecture for the full period will be awarded full points.
- Attendance points may be lost for attitude, teamwork, and/or other interpersonal issues.

- You are expected to attend all classes. Chemistry is too hard to learn on your own. Some lecture material not found in the text may be presented during the semester that may show up on exams.
- Online Homework
 - This course uses the Mastering Chemistry online homework system. Details about registering in Mastering Chemistry will be discussed on the first day of class.
 - Assignments and due dates will be listed in the Mastering Chemistry system.
 - Access to a computer with the internet is required for this course.
- Electronic Devices Policy
 - Use of cell phones is prohibited during class and lab time. Students using phones for unapproved purposes during lab will be asked to leave lab and will earn a grade of zero on material for that lab period.
 - Wearing headphones during class, lab, or an exam is not allowed. Use of listening devices will earn the student a zero on work for that class session.
 - Students are not to be in possession of electronic devices (phones, music players, watches, etc) during an exam. Student found with devices other than scientific calculators during an exam will earn a grade of zero on that exam.
- Laboratory Experiments
 - There will 10 experiments performed during the laboratory periods over the course of the term.
 - Any experiments not completed and turned in will receive a grade of zero.
 - Any student earning a zero grade on three or more experiments will earn a grade of “F” in this course.
 - A schedule of experiments will be provided as a separate handout.
 - It is the responsibility of the student to arrive to lab prepared for the correct scheduled experiment.
- Laboratory Conduct and Attire
 - Students are expected to adhere to the guidelines set forth in the “Commitment to Laboratory Safety Pledge” and in the safety video.
 - Students must wear long pants covering their ankles (leggings are unacceptable), closed shoes (no exposed skin or sock), and shirts that cover their shoulders.
 - Approved safety glasses/goggles at all times in the lab. Students who wear corrective-vision glasses must have elastic-strap safety goggles that cover the entire glasses and seal against the forehead.
 - Long hair should be pulled back. Failure to follow laboratory safety protocols could result in injury to yourself or others and will result in reduction of your laboratory grade.
 - Students not dressed appropriately for lab will be asked to leave and will earn a grade of zero on that experiment.
 - Students are required to wear appropriate personal protective equipment (PPE) in the face-to-face lab environment. ***Students will not be allowed to enter the lab if they are not wearing proper safety glasses/goggles and a face covering that covers both their nose and mouth.*** This PPE must be worn the entire time students are in the lab. If PPE is removed while the student is in the lab, that student must immediately leave the lab and will earn a grade of zero for that experiment.
- Prelaboratory Assignments
 - Prelaboratory Assignments accompany each experiment in the lab manual and must be completed prior to working the experiment.
 - ***Prelaboratory Assignments are due by the beginning of the laboratory period.*** Students not turning in a complete Prelaboratory Assignment will not be allowed to participate in that experiment and will receive a grade of zero on that experiment.
- Postlab Assignments
 - Every experiment consists of data pages for recording data and observations during the experiment and post-lab questions to be completed during or after the experiment. Together, these pages are the “Postlab” assignment.
 - Unless stated otherwise, postlab assignments are due at the end of the laboratory session.
- Lab Practical Exam
 - A Lab Practical is required and is worth 15% of the laboratory grade.
 - This will involve designing and conducting an experiment and writing a lab report about the experiment. More details will be given during the laboratory periods and can be found in the lab manual. The Lab Practical is an exam, and all Exam Guidelines must be followed (see above).
 - Students not completing the Lab Practical will earn a grade of “F” in the course.
 - In the event that the course must move to a fully online mode during the semester, the Lab Practical Exam will be

administered virtually.

- The Lab Practical Report must be submitted as a pdf file online through blackboard.

- Laboratory Evaluation/Grading Policy

- *The laboratory portion of the course counts towards 25% of your overall course grade.*

▪ Regular Experiments	75%
▪ Lab Practical	15%
▪ <u>Behavior, Safety, & Teamwork</u>	10%
▪ Total	100%

- Questions in the lab manual that require written explanations must be answered in complete, thoughtful sentences. Failure to do so will result in loss of points.
- Calculations in the lab report must show all of the steps necessary to generate the answers provided, including proper use of units and significant figures. Failure to do so will result in loss of points.
- Lab papers must be completed neatly in pencil. Lab papers that are sloppy and/or illegible will not be graded; although, some points may be earned for completing the experiment. Errors must be completely erased. Lab reports written in pen and lab reports with scratched-out or scribbled-out writing will not be accepted and will earn zero points.
- Copying answers on any work will not be tolerated. Lab papers that appear to have answers copied from other students or internet sources or that appear to have cheated in any way will earn a grade of zero.
- Students are expected to attend all laboratory periods. There is no make-up experiment, and failing to attend lab will earn you zero points for that experiment. "I have to work" is not an acceptable excuse for missing a laboratory period.
- Leaving lab early is not permitted; students leaving lab before the experiment is completed without permission of their lab partner(s) and instructor may earn a grade of zero on that experiment.

- Withdrawal Date (Drop Date)

- **Thursday, April 8** is the last day to withdraw from the course with a grade of "W". If you stop attending class and fail to officially withdraw, expect to earn a grade of "F" in the course.

Tentative Course Timeline:

- The instructor reserves the right to make adjustments to this timeline at any point in the term.
- This course will cover most of the material in Chapters E and 1-10 in the Tro text, additional material may be included if time permits. More detail can be found by examining the Table of Contents in the text and the "Topical Course Outline" posted on Blackboard.

- Week 1 Introduction to Chemistry
- Week 2 Dimensional Analysis
- Week 3 Atomic Theory; Mass and Moles
- Week 4 Quantum Mechanics, Orbitals, and Electron Configurations
- Week 5 EXAM 1; Periodic Trends
- Week 6 Ionic Compounds and Composition
- Week 7 Covalent Compounds; Drawing Lewis Structures
- Week 8 MIDTERM EXAM 2; Covalent Bonds
- Week 9 SPRING BREAK
- Week 10 Molecular Geometry; Valence Bond and Molecular Orbital Theories
- Week 11 EXAM 3; Chemical Equations and Stoichiometry
- Week 12 Solution Calculations, Electrolytes, and Precipitation Reactions
- Week 13 Acid Base Reactions; EXAM 4
- Week 14 Thermochemistry
- Week 15 Thermochemistry and Gases
- Week 16 Gases; MIDTERM EXAM 5
- Week 17 ACS FINAL EXAM
-
- NTCC Spring Graduation – Saturday, May 15

Student Responsibilities/Expectations:

- This course covers a lot of material and moves rapidly, so do not fall behind.
- Material in this course is cumulative and builds on itself, and future chemistry courses requires knowledge from this course.

- **The only way to learn chemistry is through practice.** You must be willing to spend time working problems from the textbook to be successful. If you are having problems with a particular topic, it may even be necessary to work problems from the textbook that are not assigned.
- At the first sign of trouble you should seek help immediately. I am happy to help you with any of your chemistry coursework. However, if you wait too long to seek help, there is a point where there will be nothing I can do to help you.
- Work with a classmate on the homework, but do not just copy answers that you do not understand. There is a difference between working together and cheating.
 - If it feels like cheating, then it is cheating.
 - Assignments that appear to be copies of each other will earn grades of zero.
 - Students caught cheating will earn a zero on that quiz, lab, or any non-exam assignment and may earn a grade of "F" in the course for such actions.
 - Students caught cheating on an exam, midterm exam, or final exam will earn an "F" in the course.
 - Students with multiple instances academic dishonesty will earn a grade of "F" in this course.
- Do not wait until the night before a test to study. Almost everything we cover will come up again later in the class. If you learn the material only long enough to take an exam, you will not recognize it when we encounter it again. This will cause you to struggle through the entire course and to struggle through future chemistry courses.
- Questions and/or observations are encouraged during the class period. Courteous and attentive behavior is always expected. Students who consistently misbehave can expect to have their grade lowered.
- Like all colleges, Northeast Texas Community College strives to be a "community of scholars." Please remember that you and all of the students in this class are pursuing very important goals in your lives. As human beings and as scholars, I expect every student to be courteous and considerate toward other students throughout the lecture and laboratory portions of this course.

Course Student Learning Outcomes: Upon successful completion of this course, students will...

1. Define the fundamental properties of matter; and classify matter, compounds, and chemical reactions.
2. Determine the basic nuclear and electronic structure of atoms, with a basic understanding of quantum mechanics.
3. Identify trends in chemical and physical properties of the elements using the Periodic Table.
4. Describe the bonding in and the shape of simple molecules and ions.
5. Convert units of measure and demonstrate dimensional analysis skills, and solve stoichiometric problems.
6. Write chemical formulas, and use the rules of nomenclature to name chemical compounds.
7. Define the types and characteristics of chemical reactions, write and balance equations.
8. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
9. Determine the role of energy in physical changes and chemical reactions.
10. Use basic apparatus, apply experimental methodologies used in the chemistry laboratory, and demonstrate safe and proper handling of laboratory equipment and chemicals.
11. Conduct basic laboratory experiments with proper laboratory techniques.
12. Make careful and accurate experimental observations, relate physical observations and measurements to theoretical principles, and record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
13. Design fundamental experiments involving principles of chemistry, and interpret laboratory results and experimental data, and reach logical conclusions.

College Student Learning Outcomes:

- **Critical Thinking Skills**
 - CT1. Students will demonstrate the ability to 1) analyze complex issues, 2) synthesize information, and 3) evaluate the logic, validity, and relevance of data.
- **Communication Skills**
 - CS1. Students will effectively develop, interpret and express ideas through written communication.
- **Empirical and Quantitative Skills**
 - EQS1. Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form.
 - EQS2. Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.
- **Team Work**
 - TW2. Students will work with others to support and accomplish a shared goal.

NTCC Academic Honesty/Ethics Statement:

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements:

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to: online through the BlackBoard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (<http://www.ntcc.edu/>) for instructions about continuing courses remotely, BlackBoard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the BlackBoard course site.

ADA Statement:

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

Family Educational Rights and Privacy Act (FERPA):

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.