CHEM 1406.001 – Introduction to Chemistry I – F2F

Course Syllabus: Fall 2025

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

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	Monday	Tuesday	Wednesday	Thursday	Friday	
Office Hours		9-11am 4:30 – 5 pm	1:30 – 4 pm	9-11 am 2 – 5 pm		And by appointment (send email to set up time)

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: 4 credit hours.
Lecture/Lab/Clinical: Three hours of lecture and three hours of lab each week.
A survey course introducing chemistry, designed for allied health students and for students who are not science majors. Topics include inorganic, organic, and biochemistry with an emphasis on health sciences. The natural sciences and health science divisions of the college recommend that CHEM 1406 be the first course in any health sciences sequence and be taken prior to enrolling in A & P I. The topics covered in CHEM 1406 serve as a foundation to the following courses: A & P I and A & P II, Microbiology and Nutrition. May be taken as preparation for CHEM 1411 but cannot be substituted for CHEM 1411.
Note: Additional course fee(s) required.

Prerequisite(s): TSI complete.

Core Curriculum Purpose and Objectives:

Through the core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning. Courses in the foundation area of life and physical sciences focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

College Student Learning Outcomes:

Critical Thinking Skills

CT.1 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

CS.1 Students will effectively develop, interpret, and express ideas through written communication.

Empirical and Quantitative Skills

EQS.1 Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form.

EQS.2 Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.

Teamwork

TW2. Students will work with others to support and accomplish a shared goal.

Student Learning Outcomes:

1. Demonstrate the ability to carry out conversion problems, including dosage, nutritional, and temperature conversions.
2. Be able to identify part of the atom, write isotopic formulas, write nuclear decay equations, and solve half-life problems.
3. Be able to define the octet rule, predict charges on ions, identify ionic vs. covalent bonding, write formulas and names for compounds, and use VSEPR theory to predict shapes of simple molecules.
4. Be able to write and balance chemical equations, recognize reaction types, define oxidation/reduction, and understand the factors that influence reaction rate.
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6. Identify types of attractive forces present in compounds, define pressure, and solve simple gas law problems.
7. Distinguish between solute and solvent, write equations with solutions such as electrolytes and nonelectrolytes. Express concentrations as percent, equivalent or molarity units and perform dilution calculations.
8. Describe acids and bases using Arrhenius and Bronsted-Lowry definitions, define chemical equilibrium and use LeChatelier's principle, identify acid/base conjugate pairs, write an equilibrium expression, and calculate pH or $[H_3O^+]$.
9. Be able to understand the structure and metabolic activity of carbohydrates, lipids, proteins, and nucleic acids.
10. Working in teams, students will demonstrate safe and proper handling of laboratory equipment and chemicals and carry out experiments and experimental work by calculating, interpreting, and communicating experimental results clearly in lab notebooks or written reports.

These learning objectives will be assessed throughout the course and on the final exam.

Evaluation/Grading Policy:

28% Unit exams (4)
7% Midterm Exam
10% Comprehensive Final Exam
25% Laboratory
13% Homework (ALEKS/other)
13% Pie Progress Goal (ALEKS)
4% Attendance
100% Overall course grade

Grading Scale

A	100-90%
B	89-80%
C	79-70%
D	69-60%
F	<59%

Grades are posted to Blackboard during the term. The student should email the instructor for any questions or concerns about grades. Grades are typically posted within a week. Overall grades will be rounded according to standard rounding rules (i.e., 89.4 = 89 but 89.5 = 90), but grades must be earned (not "bumped up" to a higher letter grade when it was not earned).

Required Instructional Materials:

Inclusive Access: NTCC has negotiated with the publisher to obtain a discounted price for the lecture course materials. The student's access to the eBook and ALEKS are included in the price of tuition and will be available on the first day of class through a link at the top of the course page in Blackboard. The materials are required for this class and essential for student success. Through September 14, 2025, the student may opt out of purchasing these materials from the College Store. If a student chooses to opt out, NTCC will issue a refund for the Inclusive Access, and the student will be responsible for purchasing the eBook and ALEKS access from another vendor. If hard copies of the textbook are desired in addition to electronic access, they may be purchases in the College Store at a discounted price.
General, Organic, and Biological Chemistry w/ALEKS 360 *Smith; 6th Edition*
Publisher: McGraw-Hill **SBN10: 1260732037 | ISBN13: 9781260732030**

Introductory Chemistry Lab Manual; CHEM 1406 *NTCC, Hearron*
Safety Goggles: Required for participation in all lab activities
Scientific calculator: A TI-30X is recommended; No programmable or cell phone calculators are allowed on quizzes and exams; sharing calculators during a test is not permitted. Bring a calculator to class every day.

Optional Instructional Materials:

A spiral notebook for taking notes in class
A 3-ring notebook for keeping handouts

Minimum Technology Requirements:

Laptop or computer with high-speed internet access
Microsoft Office 365 (available as a free download for all NTCC students)
Scientific calculator as described above

Required Computer Literacy Skills:

Ability to use a web browser to access NTCC Blackboard Learning Management System for course information, eBook, ALEKS assignments. **[**Computers are available on campus in the STEM Lab (MS 112) and the Learning Commons]
Ability to access NTCC student email system and communicate professionally and competently with instructor
Ability to create and complete Word documents, save on your computer, and upload into Bb assignment links as needed.

Communications: NTCC email is the official form of communication used by the college. Course announcements will be made through Blackboard and copied to the student's NTCC email account. To schedule a virtual TEAMS or in-person appointment with the instructor outside of office hours, the student should email the instructor. Students may email anytime, even after hours and weekends. The instructor typically responds to email messages within 24 hours.

Course Structure and Overview:

Lecture:
This course is a traditional face-to-face introductory chemistry course. We will use the learning management system *Blackboard,* eBook *General, Organic, and Biological Chemistry*, the online homework system *ALEKS 360,* and *CHEM 1406 Lab Manual***.**

Tentative Course Timeline (*note* instructor reserves the right to make adjustments to this timeline at any point in the term): *A printable detailed schedule can be found in the Start Here folder of Blackboard.*
Week 1: Chemistry basics, measurement, dimensional analysis, log-in to "ALEKS 360"; lab safety

Week 2: Atoms and isotopes, radioactivity, nuclear changes; half-lives, measurements (lab)
Week 3: Electrons in atoms, octet rule, ionic and covalent bonds and VSEPR; mineral/fat content of milk (lab)
Week 4: Unit 1 Exam, VSEPR (lab)
Week 5: Kinetics, chemicals reactions; the mole; periodicity (lab)
Week 6: Unit 2 Exam, intermolecular forces; empirical formula (lab)
Week 7: Gas laws, solutions, electrolytes, dilution, molecular models (lab),
Week 8: Midterm exam (includes Unit 3); Identifying and naming acids and bases, and pH; solutions (lab)
Week 9: Equilibrium constants, weak acids/bases; LeChatelier's Principle; titration (lab)
Week 10: Representing organic compounds, functional groups, nomenclature of organic compounds, isomers, osmosis (lab)
Week 11: Unit 4 Exam; dietary lipids; condensation reactions (lab).
Week 12: Classes of carbohydrates, stereochemistry of monosaccharides; mono- and polysaccharides (lab)
Week 13: Protein structure and function, enzymes; lactose (lab)
Week 14: Components and formation of nucleic acids, DNA, RNA, protein synthesis, metabolism
Week 15: Unit 5 Exam
Week 16: Final Exam

Exams:
Exams are given in class on the scheduled date. Typically they consist of a mixture of multiple choice and free response questions. Students may use a non-programmable calculator and instructor-provided reference information like a periodic table and equation list. There will be no make-up exams unless the student arranges with the instructor **before** the exam administration. There are three types of exams:

- Four unit exams
- The midterm exam over the first eight chapters (first three units)
- The comprehensive final exam (must be taken in class at the scheduled time during finals week)
    - To help the student prepare for each exam, Blackboard has practice problems and other resources.
    - Students may quiz themselves with the ALEKS assignments titled "Extra Credit Prep for Unit # Exam" which may be completed before each unit exam and/or before the final exam. Each one is worth 5 extra points averaged into the Unit Exam average.

Laboratory Experiments:
Laboratory work is an integral part of the chemistry class.

- There are no make-up labs for missed experiments, but the lowest grade will be dropped at the end of the course.
- Pre-lab papers must be submitted at the beginning of each lab period to receive credit.
- Refer to the course schedule to know which pre-lab to do each week.
- **No late labs** are accepted. Labs are due at the end of lab unless there are extenuating circumstances that caused the lab to take longer than expected.
- Students should bring the lab manual (buy at College Store) and safety goggles/glasses on the first day of lab.

Homework:
This category includes homework assignments in ALEKS, an online homework system, as well as any other assignments that do not fit into another category.

- If there are any in-person assignments, you must be present to earn credit; there are no make-up opportunities for missed in-person assignments.
- To register for the ALEKS materials, the student simply **clicks on the ALEKS link** found **at the top of the** course page in **Blackboard** and completes the registration using the NTCC email address (to facilitate NTCC tech help if needed during the semester); no access code is needed.
- The student will use this same link to access homework assignments throughout the semester.
- ALEKS homework is due **Mondays at midnight** (see schedule for specific due dates). Students should NOT

wait until the night before the due date to start these assignments but rather should pace themselves. Chemistry is learned through practice.

- There are two kinds of ALEKS assignments:
    - Traditional, non-adaptive **Homework** assignments which are open from the first day of class until the due date.
        - Students have 5 attempts to answer each question correctly.
        - Students have 2 attempts to submit each Homework assignment until the due date.
        - Students may retake the incorrect problems after the first submission; ALEKS keeps the best score.
        - Students have access to embedded resources (on the right bar in ALEKS) such as the eBook, periodic table, tables of reference material, and sometimes short instructional videos. Students also have access to explanations, but it will "cost" them one of their 5 attempts on the question.
        - **The goal is to *master* the topic.**
    - **Modules** which are available only during the "open" window. Only one Module can be open at a time, but if the student completes a Module before the due date, he may work on future or past modules as well as any non-past-due Homework assignments.
        - ALEKS Modules are non-traditional in that a student must correctly answer (variations of) a question 3 – 5 times before receiving credit; the required number of correct answers varies for each question.
        - There are fewer questions than traditional homework assignments to give time to "prove" mastery by correctly answering multiple times (as well as to give time to refer to embedded resources to learn whatever is not yet understood).
        - The student earns full credit for a Module by *completing* all the questions before the due date, regardless of how many questions are missed before getting the required number of correct answers.
        - Students have access to embedded resources like the eBook, periodic table, tables of reference material, explanations and sometimes short instructional videos.
        - There is no penalty for clicking Explanation in Modules; it gives a detailed solution to the problem, and then a new question is presented afterward to try for credit.
        - **The goal is to *master* the topic.**

    - Both kinds of ALEKS assignments require **great attention to detail**; this is a needed skill in chemistry and one that will transfer to any career path. Do not hesitate to click on Explanation in Modules to see what is wrong; often it is just a small detail like rounding off to the wrong number of significant figures.
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There are two kinds of grades earned in ALEKS:

- The **Homework grade** which is the calculated from the grade earned on Modules and Homework assignments on the due dates.
- The **Pie Progress Goal grade** which shows on which topics the student has shown mastery.
    - ALEKS **Knowledge Checks** assess the student's mastery at the beginning and end of the semester and before unit exams. They are used to personalize learning and ensure retention of learning. They may contain up to 25 questions.
    - It is to the student's advantage to reason out the answer or even make a guess on these knowledge checks because ALEKS updates the Pie Progress chart and adapts the cycles of learning/assessing based on these answers.
    - It is possible to lose part of the Pie Progress Goal if mastery is not retained (and re-gain it later).
- The schedule has several blocks of time called Open Pie when students can work on any

Module, including **closed** (past due) ones to earn credit for mastering more questions. The Homework grade will not change, but the Pie Progress Goal will improve.
- The Pie Progress Goal is expected to start out as a low percentage and increase as the student gains more mastery.

Late Assignments:

Students may submit the ALEKS Homework assignments late with a 2% per day penalty.
Students may NOT submit late Modules in the sense that the "Homework" grade is locked in after the due date.
However, the student *can* improve his **Pie Progress Goal** by continuing to work on the Module after the due date (but only during Open Pie times…not when another Module is open).

Institutional/Course Policy:

Attendance:

Regular and punctual attendance at all scheduled classes is expected for all students. Attendance is necessary for successful completion of course work. Students are expected to communicate with the instructor regarding any absence. The student is responsible for initiating procedures for make-up work. Attendance Certification is based on completing the **Student Questionnaire** in the Start Here folder of Blackboard by midnight, **August 28, 2025**.

Student responsibilities:

- ✓ The student will attend lecture in person with the instructor and classmates on Tuesdays and Thursdays from 11am – 12:20 and will attend lab on Tuesdays from 1:30pm – 4:20pm.
- ✓ The student will study and complete homework assignments outside of class.
- ✓ The student will follow lab directions and lab safety protocols and submit lab reports at the end of lab.
- ✓ The student will take the initiative to contact the instructor for help as needed.
- ✓ The student will have **self-discipline** and **organization** to complete assignments **on time**.
- ✓ The student will check Blackboard and NTCC email every day.

Late work: Chemistry is a sequential course; each topic builds on previously taught topics. Therefore, it is critical to meet the assignment deadlines each week.

- *Exams* must be taken at the scheduled time unless alternate arrangements are made with the instructor before the exam is administered.
- No late *labs* are accepted.
- Missed *assignments* in class (if any) cannot be made up.
- The late policy for ALEKS is explained above in the section titled Homework.

Withdrawing: There is a procedure for withdrawing from this course; the student should not simply quit attending. If the student determines that it is in his best interest to withdraw from this course, the student must contact the Registrar's office to initiate the withdrawal process (903-434-8139 or bgooding@ntcc.edu). The last day to drop this course with a grade of W is Thursday, Nov. 6, 2025. **Failure to officially withdraw by this date will result in the student's earned grade being factored into the GPA.**

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.

Statement Regarding the Use of Artificial Intelligence (AI) Technology:
Absent a clear statement from a course instructor, use of or consultation with generative AI shall be treated analogously to assistance from another person (collusion). Generative AI is a subset of AI that utilizes machine learning models to create new, original content, such as images, text, or music, based on patterns and structures learned from existing data (Cornell, Center for Teaching Innovation). Unauthorized use of generative AI tools to complete an assignment or exam is not permitted. Students should acknowledge the use of generative AI and default to disclosing such assistance when in doubt. Individual course instructors may set their own policies regulating the use of generative AI tools in their courses, including allowing or disallowing some or all uses of such tools. Students who are unsure of policies regarding generative AI tools are encouraged to ask their instructors for clarification. **(Adapted from the Stanford University Office of Community Standards-- accessed August 31, 2023)**

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.

ADA Statement:
It is the policy of NTCC to provide reasonable accommodation for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines regarding 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 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.

Eagle Assist
At Northeast Texas Community College, we understand that students may need support that extends beyond the

classroom. “Eagle Assist” is the place to start when looking for that type of assistance. Our support system is here to help you succeed in both your academic and personal growth. www.ntcc.edu/eagleassist

Services provided:

- Mental health counseling
- Classroom accommodations
- NTCC Care Center Food & Hygiene Closet
- Financial literacy
- Tutoring

Mental Health Counseling Services are available on campus – in person and online – to all NTCC students at no cost. If you are experiencing concerns, you may contact counseling-center@ntcc.edu or call 903-434-7825. Open Monday – Thursday, 8am – 6pm; Friday, 8am - noon.