



## **CHEM 1406.001 – Introduction to Chemistry I – F2F**

**Course Syllabus:** Spring 2026

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

### **Instructor: Sarah Whitfield**

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Office	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Hours	By appt.	8:30 – 9:30am 4:30 – 5:30pm	8:30-9:30am 10:30am – noon 1:00 – 5:30pm	8:30 – 9:30am	By appt.	Email anytime*

\*Refer to Communications section of syllabus

***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.
5. Be able to distinguish organic and inorganic compounds, identify functional groups and distinguish and identify isomers. Name straight chain, branched and cycloalkanes or alkenes.
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 percentage, 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  $[\text{H}_3\text{O}^+]$ .
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:**

35% Chapter exam average (5)  
25% Laboratory average  
13% Homework Average (ALEKS/other)  
13% Pie Progress Goal  
10% Comprehensive Final Exam  
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. Graded work is typically returned within a week. Overall grades will be rounded according to standard rounding rules (i.e., an 89.4 = 89 but an 89.5 = 90), and grades must be earned (not “bumped up” to a higher letter grade that 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 eBook and ALEKS are included in the price of tuition** and will be available on the first day of class through a link in Blackboard - Start Here folder. The materials are required for this class and essential for student success. Optional print copies of the textbook, in addition to electronic access, are available in the College Store for purchase at a discounted price. Through Feb. 4, 2026, 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 from another vendor.

***General, Organic, and Biological Chemistry w/ALEKS 360 Smith; 6<sup>th</sup> Edition***

**Publisher:** McGraw-Hill

**SBN10: 1260732037 | ISBN13: 9781260732030**

***Introductory Chemistry Lab Manual; CHEM 1406 NTCC, Hearron*** – Must be purchased in the NTCC bookstore. In addition to the lab instructions, it contains the pre-lab assignment and lab report to be submitted each lab session.

**Safety Goggles or Glasses:** Required for participation in all lab activities. May be purchased in the NTCC bookstore or elsewhere. Please check with the instructor to confirm that eyewear purchased elsewhere is adequate for the chemistry lab. Students who wear corrective-vision glasses must wear goggles rather than safety glasses.

**Beginning Tuesday, February 3, students arriving at the lab without proper safety eyewear will be required to “rent” eyewear for a deduction of 5 points on the BST grade for that lab.**

**Scientific calculator:** A TI-30X is recommended; No programmable or cell phone calculators are allowed on quizzes and exams; sharing calculators is not permitted. Bring a calculator to class every day.

**Optional Instructional Materials:**

A 3-ring notebook for storing handouts and graded work  
A spiral notebook or loose-leaf paper for taking notes

**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, and ALEKS assignments
- 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 are 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*.

- This class meets for lecture on Tuesdays and Thursdays from 11:00am – 12:20pm.
- Lecture will take approximately two-thirds of the class time, leaving the remaining time for students to work in small groups on a paper quiz, due at the end of the class time. The quizzes are designed to enable students to engage with lecture material immediately.

### Tentative Course Timeline (\*note\* instructor reserves the right to adjust 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 Exam 1, calorimetry (lab)

Week 4: Covalent bonds and VSEPR; mineral/fat content of milk (lab)

Week 5: Kinetics, reduction-oxidation reactions; empirical formula (lab)

Week 6: Exam 2, Gas laws, chemical reactions & VSEPR (lab)

Week 7: Intermolecular forces; solutions, electrolytes, dilution, periodicity (lab),

Week 8: Exam 3 (comprehensive); Identifying and naming acids and bases, and pH; solutions (lab)

Week 9: Equilibrium constants, weak acids/bases; LeChatelier's Principle; molecular models (lab)

Week 10: Representing organic compounds, functional groups, nomenclature of organic compounds, isomers, condensation reactions (lab)

Week 11: Unit 4 Exam; dietary lipids; titration (lab).

Week 12: Classes of carbohydrates, osmosis (lab)

Week 13: Protein structure and function, enzymes; stereochemistry of monosaccharides; mono- and polysaccharides (lab)

Week 14: Components and formation of nucleic acids, DNA, RNA, protein synthesis; lactose (lab)

Week 15: Metabolism; Exam 5

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 five exams (Exam 3 is comprehensive like a midterm exam) plus the final exam.

- The final exam is comprehensive; students must take it in class at the scheduled time during finals week.
  - To help the student prepare for each exam, Blackboard has practice problems and other resources.
  - A review will be offered during lab time the week before the final exam.

### **Laboratory Experiments:**

Laboratory work is an integral part of the chemistry class. There are 13 labs during the semester, including one virtual lab. Students need the lab manual (bought at the NTCC bookstore) and safety goggles/glasses on the first day of lab.

Students receive three grades for each experiment:

- The **Pre-Lab grade** is worth 25 points: Pre-Lab assignments help orient the student to the key points of the lab, as well as review particular safety hazards of the lab. They are due at the beginning of each lab period to receive credit. Refer to the course schedule to know which pre-lab to do each week.
- The **Lab Report grade** is worth 75 points: Lab reports include data tables and post-lab questions. They are due before leaving lab, and **no late labs** are accepted unless otherwise stated.
- The **Behavior – Safety – Teamwork (BST) grade** is worth 20 points: A student earns the full 20 points for proper lab conduct and attire. Students may lose BST for improper conduct or attire.
  - Improper conduct includes horseplay or other unsafe behavior.
  - Proper attire includes Personal Protection Equipment (PPE) for the chemistry lab - clothes that cover the shoulders, middle, legs, and feet, as well as safety goggles/glasses. Student may “rent” eyewear with a loss of BST points starting on Feb. 3; however, students may not participate in lab at all and will earn a grade of zero if lacking appropriate clothing and footwear.
  - Pull back long hair.
  - Avoid wearing dangling jewelry or sleeves that could brush into the Bunsen burner flame.
  - Proper teamwork includes both partners working through the lab procedure and both helping to clean up before leaving.
- There are **no make-up labs** for missed experiments, but the lowest grade will be dropped at the end of the course.

### **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, the student must be present to earn credit; there are no make-up opportunities for missed in-person assignments.
- To register for the ALEKS materials, simply **click on the ALEKS link found at the top of the course page in Blackboard** and complete the registration using the NTCC email; no access code is needed.
- Use this same link to access homework assignments throughout the semester.
- ALEKS homework is due on **Sundays 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.
- After the due date, a student may submit an ALEKS Homework assignment late with a 2% per day penalty.
- Non-traditional, adaptive **Modules** which are available only during the “open” window. Only one Module can be open at a time, but if the student submits a Module before the due date, then no module is open at that time, so he may work on any future or past modules.
  - ALEKS Modules require the student to answer correctly (variations of) a question three to five 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 for topics not yet understood).
  - The student earns full credit for a Module by *completing* the required number of correct answers before the due date, regardless of how many questions are missed in the process. Once the due date is past, the Module grade is locked in. If the student works on the Module later, the Pie Progress Goal grade improves but not the Module grade (see paragraph about ALEKS grades below).
  - Students have access to embedded resources like the eBook, periodic table, 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 gives a new problem 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. In Modules, do not hesitate to click on Explanation to see what is wrong; often it is just a small detail like rounding off to the wrong number of significant figures. (Homework does not offer Explanations.)

There are two kinds of grades earned in ALEKS:

- The **Homework grade** earned on Modules and Homework assignments as of the due dates.
- The **Pie Progress Goal grade** tracking topics the student has mastered (shown through Homework assignments, Modules, and Knowledge Checks) throughout the semester.
  - ALEKS **Knowledge Checks** assess the student’s mastery at the beginning and end of the semester and a couple of times during the semester. 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 try 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 it is possible to re-gain it later). Again, the goal is to master the topics and retain that knowledge.
  - Only one module may be open at a time in ALEKS. Because of this, there are only two times a student can work on past-due modules to show increased mastery: during scheduled Open Pie times and during the time after the current module is submitted

but before its due date. These are times when no module is open, allowing students to work on *any* Module, future or past due, to improve the Pie Progress Goal by showing more mastery. The Homework grade will not change, but the Pie Progress Goal will improve.

- Please note that the Pie Progress Goal starts out as a low percentage and increases as the student gains more mastery; do not be alarmed by a low Pie Progress Goal grade at the beginning.

## **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, **January 23, 2026**.

### **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 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 *quizzes and assignments* in class 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](mailto:bgooding@ntcc.edu)). The last day to drop this course with a grade of W is Thursday, April 16, 2026. **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 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.

### **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](http://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](mailto:counseling-center@ntcc.edu) or call 903-434-7825. Open Monday – Thursday, 8am – 6pm; Friday, 8am - noon.