



CHEM 1406.085 – Introduction to Chemistry I - ONLINE

Course Syllabus: Summer 2025

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

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Office	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Hours	By appt.	By appt.	By appt.	By appt.	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 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:

30% Chapter exams
10% Midterm Exam
15% Comprehensive Final Exam
25% Laboratory (Science Interactive)
10% Homework (ALEKS/other)
10% Quizzes (ALEKS)
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 eBook and ALEKS access code 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. Optional print copies of the textbook, in addition to electronic access, are available in the College Store for purchase at a discounted price. Through June 22, 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 code from another vendor.

General, Organic, and Biological Chemistry w/ALEKS 360 Smith; 6th Edition

Publisher: McGraw-Hill

ISBN Number: 9781264497003

Introductory Chemistry lab kit from *Science Interactive*

Various household items to complete the labs; see list in Start Course Here folder

Scientific calculator: A TI-30X is recommended; No programmable or cell phone calculators are allowed on quizzes and exams.

Optional Instructional Materials: A spiral notebook for taking notes as you study

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, and instructions for Science Interactive laboratory experiments

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 online course is meant to cover the same concepts and topics covered in a traditional (face-to-face) Introductory Chemistry course. Online instruction is provided through reading assignments, lessons, tutorials, simulations, visualizations, and homework practice to reach mastery using the learning management system Blackboard with the eBook, *General, Organic, and Biological Chemistry*, and the online homework system ALEKS. Laboratory experiments will be completed at home using materials in the *Science Interactive* lab kits. We cover approximately two or three chapters per week in the summer term. The course does not meet virtually (such as on Teams), but the instructor is available to meet virtually with students individually as needed.

Exams:

- Four exams will be given to assess a student's mastery of topics covered in the assigned chapters. They typically cover two units (each unit is approximately two chapters). Each exam is taken in Blackboard

unsupervised following the NTCC Academic Honesty and Academic Ethics policy and must be taken during the scheduled window of time that runs from 8am Sunday through midnight Tuesday. Students may use instructor-provided reference information such as a periodic table, a list of equations, and a non-programmable calculator.

- The mid-term exam and comprehensive final exam are proctored exams which must be taken during the scheduled window of time at the **NTCC testing center or an alternative proctored location**. Students may use instructor-provided reference information such as a periodic table, equation lists, and a non-programmable calculator. Students CANNOT take these exams at home. These are the options:

Using the NTCC testing center

NTCC's testing center is located on the main campus of NTCC in the Student Services Building. The hours of the testing center are Monday—Thursday 8:00 a.m. to 6:00 p.m. and Friday 8:00 a.m. to 12:00 p.m.

Use another testing center

If a student does not reside near NTCC's service center, he may choose to take these exams at another testing center. If desiring to use an alternate test center, the student must give the instructor contact information for the alternate test center (physical address, email, and a phone number) by Wednesday of the second week of class so the instructor can contact the center to determine if it will be acceptable. It is the student's responsibility to find this alternate test center and to pay any fee the center may charge.

Other—If the first two options are not available, students should contact the instructor to make alternative arrangements by the end of the second week of class.

Laboratory Experiments:

Laboratory work is an integral part of the chemistry class. Computer-based virtual labs are useful but cannot provide the true hands-on experience that comes with the traditional chemistry laboratory. To overcome this obstacle, students will purchase and use a home lab kit from Science Interactive. Students follow the lab instructions found at each Science Interactive lab link in Blackboard; the lab report is also completed online and sometimes requires a photo to be uploaded. **Lab assignments are due at midnight on Sundays.** Refer to the course schedule to know which lab to do each week and specific due dates. To avoid getting behind in lab, the student should ORDER THE LAB KIT ASAP following the instructions provided by the NTCC bookstore and should contact the instructor if there are any issues getting the lab kit.

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. 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 if needed. The student will use this same link to access homework assignments throughout the semester.

The ALEKS homework is due on Sundays at midnight; see the schedule for specific due dates. These include questions, problems, and sometimes explanations and tutorials to help the student master the material. Chemistry is learned through practice. Students should NOT wait until the night before the due date to start these assignments but rather should pace themselves.

ALEKS allows 5 attempts at each question; this allows the student to review the material before answering again. ALEKS has certain resources like the periodic table, tables of reference material, explanations and sometimes videos available at the click of a button on the right side of the ALEKS pages. If the assignment is submitted with wrong answers, ALEKS allows the student to re-take any questions missed and re-submit the assignment a second time. ALEKS will record the best score. Be advised that ALEKS requires great attention to detail; this is a needed skill in chemistry and one that will

transfer to any career path you follow.

Quizzes:

Each unit culminates with a quiz in ALEKS. These are *adaptive* assignments requiring the student to show mastery, that is, to answer three to five questions correctly for each topic before earning credit. There are periodic Knowledge Checks in ALEKS to monitor the student's mastery of content; ALEKS personalizes the quizzes according to the results of the Knowledge Checks. The student has only one attempt on each quiz. Later, when studying for an exam, a student may use ALEKS' Review mode to focus study on the topics not yet mastered.

Attendance:

Regular and punctual attendance 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. *Attendance in this online course is counted by submitting assignments on time on Blackboard.* This course does not meet virtually (such as on Teams) or face-to-face. Attendance Certification is based on completing the Student Questionnaire in the Start Here folder of Blackboard by midnight, June 11, 2025.

Student responsibilities: Students should recognize that this is an online course.

- ✓ The student will do the same amount of work as if attending in-person.
- ✓ The student will NOT have specific days and times for class each week.
- ✓ The student will not be with the instructor and classmates in person but will study the material in Blackboard and ALEKS on his own time.
- ✓ The student will complete the labs at home on his own time using materials from the Science Interactive lab kit.
- ✓ The student must follow lab directions and lab safety protocols taught in Science Interactive.
- ✓ The student must take the initiative to contact the instructor for help as needed, but this will not be immediately available (like raising your hand in class would be).
- ✓ The student must have **self-discipline** and **organization** to complete assignments **on time**.
- ✓ The student must arrange for proctoring the mid-term and final exams at a testing center as described above in the Course Overview.
- ✓ The student must check Blackboard messages/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. Any assignment, lab or test not completed by the assigned date (or alternate date with instructor approval) earns a zero. Nevertheless, **late work turned in within 3 days of the due date is accepted for labs and ALEKS assignments with a 2% per day penalty.** The late penalty may be waived if the student has extenuating circumstances and has notified the instructor before the due date. The exams must be taken during the scheduled windows and cannot be taken late.

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, July 31, 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.

Tentative Course Timeline (*note* instructor reserves the right to adjust this timeline at any point in the term): *A printable detailed schedule is in the Start Here folder of Blackboard.*

Week 1: Introduction, chemistry basics, dimensional analysis, periodic table, log-in to ALEKS

Week 2: Ionic and covalent bonding, VSEPR

Week 3: Exam 1, chemical reactions

Week 4: Attractive forces, gas laws, electrolytes, concentration, dilution, osmosis, dietary lipids

Week 5: Exam 2, **Midterm exam at Testing Center**, acids and bases, weak acids/bases, pH, equilibrium constants, reaction rates

Week 6: Organic chemistry - Representing organic compounds, functional groups

Week 7: Exam 3, nomenclature of organic compounds, isomers

Week 8: Classes of carbohydrates, stereochemistry of monosaccharides

Week 9: Protein structure and function, enzymes, Components and formation of nucleic acids, DNA, RNA, protein synthesis, metabolism

Week 10: Exam 4, Final Exam