CHEM 1406.088 – Introduction to Chemistry I - ONLINE

Course Syllabus: Fall 2024

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

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	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Office Hours	By appt.	9:00 – 11am 1:00 – 2:00pm	9:00am – noon	9:00 – 11am 1 – 3pm	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)
20% Homework (Mastering Chemistry/other)
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), 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 Mastering Chemistry access code 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 Sept. 15, 2024, 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 Mastering Chemistry access code from another vendor.
General, Organic, and Biological Chemistry w/Modified Mastering *Frost & Deal; 4th Edition*
Publisher: Pearson **ISBN Number:** 978-0-13-498869-6

Introductory Chemistry lab kit *from Science Interactive*
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, Mastering Chemistry 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 *Mastering Chemistry***.** Laboratory experiments will be completed at home using materials in the *Science Interactive* lab kits. We cover approximately one chapter per week.

Exams:

• Four chapter exams will be given to assess a student's mastery of topics covered in the assigned chapters. Students should use these exams as feedback for progress in the course and readiness for the mid-term and final exams. Chapter exams are found in Blackboard and are taken without supervision, following the NTCC Academic Honesty and Academic Ethics policy. A chapter exam should be

taken during the open window from 8am Wednesday through midnight Friday of the posted week. Students can 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 at the scheduled time. Students can use instructor-provided reference information such as a periodic table, equation lists, and a non-programmable calculator. You CANNOT take these exams at home. You must arrange to take the exam under supervision. These are your 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 the end 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. Lab assignments are due at midnight on Fridays. Refer to the course schedule to know which labs to do each week and when they are due.

Homework:
This category includes homework assignments and quizzes in Mastering Chemistry, an online homework system, as well as any other assignments that do not fit into another category. The Mastering Chemistry homework is due **midnight Sunday** of the week after studying the chapter. Blackboard has links for each Mastery Chemistry assignment which includes tutorials and activities for key topics as well as practice problems and questions to help the student master the material.

Students should NOT wait until the night before the due date to start these assignments but rather should pace themselves. The course schedule (available in the Start Here folder of Blackboard) indicates the number of sections in each chapter to aid in pacing.

More information about registering for and using Mastering Chemistry can be found on Blackboard.

Institutional/Course Policy:

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. Attendance Certification is based on completing the Student Questionnaire in the Start Here folder of Blackboard by midnight, September 6, 2024.

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 Mastering Chemistry 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 as described above in the Course Overview.
- ✓ The student must check Blackboard messages 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. Students have access to most instructional material from the first day of class and may work ahead. 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 24 hours of the due date is accepted for labs and Mastering Chemistry assignments with a 10% penalty**. The late penalty may be waived if the student has an excused absence and informs the instructor before the due date. The exams must be taken during each scheduled window.

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 Tuesday, November 19, 2024. **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, log-in to "Mastering Chemistry," introduction to lab safety and lab procedures.
Week 2: Atoms and isotopes, radioactivity, nuclear changes, lab over data analysis and graphing.
Week 3: Electrons in atoms, octet rule, using the mole, covalent bonds and VSEPR, and periodic trends (lab).
Week 4: Review and test over Chapters 1-3.
Week 5: Representing organic compounds, functional groups, nomenclature of organic compounds, isomers, molar mass (lab).
Week 6: Thermodynamics, kinetics, types of chemicals reactions, electron configuration and bonding (lab).
Week 7: Classes of carbohydrates, stereochemistry of monosaccharides, valence shell electron pair repulsion (lab).

Week 8: Review and test over Chapters 4-6.
Week 9: Types of attractive forces, gas laws, liquids and solids, dietary lipids, chemical reactions (lab).
Week 10: Factors affecting solutions formation, electrolytes, concentration, dilution, osmosis and diffusion, Ideal Gas Law (lab).
Week 11: Identifying and naming acids and bases, equilibrium constants, weak acids/bases, and pH, acids/bases and the pH scale(lab).
Week 12: Review and test over Chapters 7-9
Week 13: Protein structure and function, enzymes
Week 14: Components and formation of nucleic acids, DNA, RNA, and protein synthesis.
Week 15: Metabolism and nucleotides, digestion chemistry, Citric acid cycle, electron transport and ATP production.
Week 16: Final Exam week