CHEM 1406.001 – Introduction to Chemistry I – F2F

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:

40% Chapter exams
25% Laboratory
15% Homework (Mastering Chemistry/other)
20% Comprehensive Final Exam
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 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 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 Mastering Chemistry 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 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 *Mastering Chemistry*, and *CHEM 1406 Lab Manual***.** We cover approximately one chapter per week.

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: Introduction to chemistry.
Week 2: Atoms and isotopes.
Week 3: Radioactivity, nuclear changes, electrons in atoms, octet rule, ionic compounds.
Week 4: Exam 1 (Chapters 1&2), covalent bonds.
Week 5: The mole, polarity, VSEPR, periodic trends.
Week 6: Thermodynamics, kinetics, types of chemicals reactions.
Week 7: Exam 2 (Chapters 3&5), alkanes
Week 8: Functional groups, nomenclature of organic compounds, stereochemistry of monosaccharides, Isomers.
Week 9: Disaccharides, polysaccharides, blood.
Week 10: Exam 3 (Chapters 4&6); gas laws, solubility.
Week 11: Solubility, lipids.
Week 12: Electrolytes, concentrations, dilution, osmosis, diffusion, cell transport.
Week 13: Exam 4 (Chapters 7&8), acids, bases, equilibrium.
Week 14: pH, drug solubility, buffers
Week 15: Protein structure and function, enzymes, DNA, RNA, and protein synthesis
Week 16: Final Exam week

Exams:
Four chapter exams will be given during class on the scheduled date. Students can 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.

The final exam will be comprehensive and must be taken at the scheduled time during finals week.

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 for them. Lab assignments are due at the beginning of the next lab session. No late labs are accepted. Refer to the course schedule to know which labs are due each week.

Homework:
This category includes homework assignments and quizzes, as well as any other assignments that do not fit into another category. Assignments primarily are in Mastering Chemistry, an online homework system, but may include assignments like quizzes in class or problems from the eBook. You must be present to earn credit for in-person assignments; there are no make-up opportunities for the in-person work.

Blackboard has links for each Mastery Chemistry homework assignment which includes tutorials and activities for key topics as well as practice problems and questions to help the student master the material. Mastering Chemistry homework is due **midnight Sunday** of the week after studying the chapter. Students should NOT wait until the night before the due date to start these assignments but rather should pace themselves. The Tentative Course Timeline 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 and will be discussed on the first day of class.

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.

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, read the eBook, and complete homework assignments and lab reports outside of class.
- ✓ The student will follow lab directions and lab safety protocols.
- ✓ 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 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. *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 and quizzes* in class cannot be made up, but assignments and quizzes in *Mastering Chemistry* may be turned in within 24 hours of the due date with a 10% penalty.

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 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.