



## CHEM 1406.001 Introductory Chemistry Health Sciences

Course Syllabus: Spring 2024 (Face-to-Face)

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*"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		10:30-11:00 AM Class and lab		10:30-11:00 AM		email anytime

*The information contained in this syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.*

### Course Description:

Survey course introducing chemistry, designed for health science students and for students who are not science majors. Topics include inorganic, organic, biochemistry with emphasis on the health sciences. The topics covered in CHEM 1406 serve as a foundation to the following courses: BIOL 1322; BIOL 2401 and 2402; BIOL 2420.

May not be substituted for [CHEM 1411](#).

Three hours of lecture and three hours of lab each week.

**Prerequisite:** TSI complete

### Required Textbooks and Supplies

**Inclusive Access:** We have negotiated with the Publisher to obtain a discounted price for your lecture course materials. Your eBook and Mastering Chemistry Access Code are included with your tuition and will be available through Blackboard on the first class day. The materials are required for your class and essential in your success. If you also determine that you would like a print copy of your text in addition to your exclusive access loose-leaf copies will be available in the College Store at a discounted price. You may opt out of purchasing your materials from the College Store through the Census Date for the course. If you choose to opt out you will be responsible for purchasing your Mastering Chemistry Access Code from another vendor. You will receive a refund for the Inclusive Access if you opt out.

***General, Organic, and Biological Chemistry w/ Modified Mastering Frost & Deal; 4th Edition***

*ISBN # 978-0-13-516876-9*

### **Additional Materials:**

**Introductory Chemistry Lab Manual: CHEM 1406** NTCC, Hearron

**Safety Goggles:** Required for participation in all lab activities.

**Scientific Calculator:** A TI-30Xa is the recommended choice. Programmable calculators, graphing calculators nor cell phone calculators will be allowed during any quiz or exam in the course.

### **Minimum Technology Requirements:**

Laptop or computer

Access to high speed daily internet

Microsoft Office 365 (available as a free download for all NTCC students)

Calculator such as TI-30Xa or equivalent. No programmable calculators or cell phones are allowed on exams.

### **Required Computer Literacy Skills:**

Ability to use a web browser to access NTCC Blackboard 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 if necessary.

### **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.

#### Team Work

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

## CHEM 1406 Student Learning Outcomes:

Students will:

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.
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 outcomes will be assessed throughout the course and on the final exam.**

## Lectures & Discussions:

- Week 1: Chemistry Basics
- Week 2: Chemistry Basics
- Week 3: Atoms & Radioactivity
- Week 4: Compounds
- Week 5: Compounds & Chemical Reactions
- Week 6: Chemical Reactions
- Week 7: Organic Compounds
- Week 8: Organic Compounds
- Week 9: Carbohydrates
- Week 10: State Changes, Solubility & Lipids
- Week 11: Solution Chemistry
- Week 12: Solution Chemistry & Acids and Bases
- Week 13: Acids & Bases
- Week 14: Proteins
- Week 15: DNA
- Week 15: Metabolism
- Week 16: Final Exam

### Evaluation/Grading Policy:

40% Regular Exams  
25% Laboratory  
20% Final Exam  
15% Assignments\*  
100% Total

### Grading Scale

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

\* Assignments include anything assigned by me including, but not limited to, quizzes, homework, problem sets, and Mastering Chemistry assignments. This course will be using the Mastering Chemistry online homework system. Details about accessing Mastering Chemistry will be discussed on the first day of class. Assignments and due dates will be listed in the Mastering Chemistry system. Access to a computer with the internet is required for this course.

**Exams:** Four regular exams will be given during the term on the dates found on the posted lecture schedule. There will be no make-up exams for missed exams without authorization before the exam date.

You must have a reliable scientific calculator for exams and quizzes. Programmable calculators, graphing calculators and cell phone calculators are not allowed. Sharing calculators will not be permitted.

There will be a **comprehensive Final Exam** given during finals week according to the posted schedule.

**Thursday, April 18, 2024 is the last day to withdraw from the course with a grade of “W”. If circumstances require you to withdraw from this course, you must do so by that date. It is the student’s responsibility to initiate the withdrawal with the registrar’s office. Failure to officially withdraw will result in your receiving a grade of F.**

### **Quizzes and Assignments:**

A quiz may be given at the beginning of the class period. Students who are late for class will not be allowed to take a quiz and will be assigned a grade of zero. There is no make-up for missed quizzes. You must be present for the entire class period to receive credit for quizzes and in-class assignments.

Assignments throughout this course may include problems from the text, handouts from class, and/or Mastering Chemistry assignments.

### **Laboratory Experiments:**

There will be 12 experiments performed during the laboratory periods over the course of the term. Any experiments not completed and turned in will receive a grade of zero. A total of 8 experiments must be completed and receive a non-zero grade in order to pass this course.

Pre-lab papers must be submitted at the beginning of each lab period or they will not be credited.

Laboratory reports must be completed in pencil and all work that is submitted for grading must be **neat and legible**. Any work that is illegible will not be graded.

There is no make-up lab for missed experiments. A schedule of experiments will be provided as a separate handout.

### Other Course Requirements:

Purchase of a simple, scientific calculator is required. You must bring a calculator with you to every class period. Use of graphing calculators, programmable calculators, calculators with extensive memories, and cell phone calculators are not allowed on quizzes or exams. Sharing calculators is not permitted. Purchase of a three ring binder for storing handouts, quizzes, and homework is recommended. Approved safety goggles must be purchased for laboratory. These are available in the NTCC bookstore, an online source, or a local medical supply.

### Student Responsibilities/Expectations:

Like all colleges, Northeast Texas Community College strives to be a “community of scholars.” Please remember that you and all of the students in this class are pursuing very important goals in your lives. As human beings and as scholars, I expect every student to be courteous and considerate toward other individuals. This classroom will practice all six college student learning outcomes: critical thinking, communication, empirical and quantitative skills, teamwork and personal and social responsibility.

Students are expected to adhere to the guidelines set forth in the “Commitment to Laboratory Safety Pledge” and in the safety video. In addition, students must wear long pants covering their ankles (leggings are unacceptable), closed shoes (no exposed skin or sock), and shirts that cover their shoulders. Approved safety glasses/goggles and face coverings at all times in the lab are also necessary. Students who wear corrective-vision glasses must have elastic-strap safety goggles that cover the entire glasses and seal against the forehead. Long hair should be pulled back. Failure to follow laboratory safety protocols could result in injury to yourself or others and will result in reduction of your laboratory grade. Students not dressed appropriately for lab will be asked to leave and will earn a grade of zero on that experiment.

As your instructor, I will attend all classes on time and prepared to teach what you are expected to learn each day. I will make a conscientious effort each class period to teach to the best of my ability and to provide you with clear, well-organized explanations of class material. I care deeply about your learning experience and your success in this course. However, that ultimate success does depend largely on you. Your success can be maximized and your potential achieved by exhibiting the characteristics of a good student including:

- 1) Honesty
- 2) Punctuality
- 3) Resourcefulness
- 4) Motivation
- 5) Organization
- 6) Diligence
- 7) Perseverance

These characteristics lead to success in college and contribute to success in future careers as well.

Remember that you have something to contribute in every class. Be aware of those around you and the activities that are going on in the classroom. To do so to the best of your ability, refrain from the use of computers, tablets and cell phones during class. Be attentive in real time! Practice mindfulness in all you do!

### **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.

### **NTCC Academic Honesty Statement:**

"Students are expected to complete course work in an honest manner, using their intellects and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. NTCC upholds the highest standards of academic integrity. This course will follow the NTCC Academic Honesty policy stated in the Student Handbook."

### **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)

### **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 the College Connection. She/he can be reached at 903-434-8218. For more information and to obtain a copy of the Request for Accommodations, please refer to the [NTCC website - Special Populations](#).

### **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 educational 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 often 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.

**Services provided:**

- Mental Health Counseling (visit [www.thevirtualcaregroup.com/ntcc](http://www.thevirtualcaregroup.com/ntcc) to activate your account)
- Classroom Accommodations
- NTCC Care Center Food Pantry
- NTCC Care Center Hygiene Closet
- NTCC Care Center Cook Nook
- Financial Literacy
- Child Care Assistance
- Emergency Aid

Send a message to [eagleassist@ntcc.edu](mailto:eagleassist@ntcc.edu)