



CHEM 1405 Introduction to Chemistry I

Course Syllabus: Fall 2020

“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 | 7:30 – 8:44 | 7:30 – 8:44 | 7:30 – 8:44 | 7:30 – 8:44 | 7:30 – 8:44 | 7:30 – 8:44 |

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:

A general course for the non-science major. An introduction to the discipline of chemistry including scientific measurements, atomic structure, bonding, stoichiometry, physical and chemical properties, energy, and chemical notation is presented. Successful completion of this series meets many of the lab science requirements for undergraduate degree programs. CHEM 1405 and 1407 are considered a first course in chemistry and thus no prerequisites exist. However, many of the topics and concepts in CHEM 1405 will have been introduced in a high school pre-AP program. May be taken to prepare for CHEM 1411 but cannot be substituted for CHEM 1411. 4 credit hours

Prerequisite(s): TSI completed

Evaluation/Grading Policy:

Evaluations will be based on homework and lab assignments, discussions, quizzes, exams and a comprehensive final exam.

The percent break down is as follows:

| | |
|----------------------|-----|
| Homework and quizzes | 20% |
| Labs | 20% |
| Exams | 40% |
| Final Exam | 20% |

Learning objectives will be assessed through: quizzes, exams, labs, discussions, and a comprehensive final exam. In some cases quizzes and labs will utilize online resources such as NTCC Blackboard accounts or Mastering Chemistry. In all cases the actual assignment and due dates will be communicated in class.

Quizzes/Homework:

Quizzes will be short and very specific in their scope. The quiz format will vary and may take place in class or can be administered online. Homework will usually consist of problem sets from the text book or administered online.

Laboratory Assignments:

Work in the laboratory is central to the topic of chemistry. Experiments performed in the chemistry laboratory can only be completed in the laboratory. If students miss an experiment it will be the student's responsibility for making up the experiment before or after school. Lab information will be provided by the instructor. Due to limitations of time in the classroom students will often be required to complete pre lab tasks or write lab procedures before working in the lab.

Exams:

All exams will be announced prior to taking the exam. Each exam will cover assigned readings, class lectures, discussion, homework and quizzes. The format of exams will generally be multiple choice and problem solving. During the course of each semester 4 exams will be administered. Students will be able to utilize instructor provide reference information such as periodic table and equations.

Final Exam:

The final exam is comprehensive and covers all chapters and topics discussed during each semester. The format of the final exam will be multiple choice.

A final grade for the course will be based on the following scale:

Grade % of Total Points

A 90 to 100

B 80 to 89

C 70 to 79

D 60 to 69

F 0 to 59

Tests/Exams:

All exams are administered in class. The final exam is comprehensive. The tentative schedule is as follows:

Exam Textbook

1 Unit 1 and 2

2 Unit 3, 4, and 5

3 Unit 6, 7, and 8

4 Unit 9 and 10

Final Exam all covered topics

Assignments:

All assignments will be listed and due dates identified in class and utilizing blackboard.

Required Instructional Materials: Chemistry: The Central Science

Publisher: Pearson

ISBN Number: 0-13-061142-5

Optional Instructional Materials:

Mastering Chemistry Access Code is included with textbook.

Lab Safety Glasses/Goggles: Approved safety glasses are available in the college store, and many safety glasses and safety goggles are also available from online retailers. Always check with your instructor before purchasing eye protection from somewhere other than the college store.

Minimum Technology Requirements:

- Laptop or computer with webcam
- 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 Connect 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

Course Structure and Overview: 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.

Student Learning Outcomes:

1. Develop a familiarity with the metric system and demonstrate the ability to carry out conversion problems, including dosage, nutritional, and temperature conversions; and demonstrate an understanding of atomic theory, and be able to use the octet rule and VSEPR theory to predict chemical formulas and structures.
2. Be able to use simple chemical nomenclature, write and balance chemical equations, recognize reaction types and understand the factors that influence reaction rate.
3. Be able to work simple gas law problems; and gain an understanding of concepts associated with solutions such as electrolytes and nonelectrolytes, solubility and equivalents, and acids and bases.
4. Be able to distinguish organic and inorganic compounds, identify functional groups and distinguish and identify isomers.
5. Be able to understand the structure and metabolic activity of carbohydrates, lipids, proteins and nucleic acids.
6. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
7. Demonstrate safe and proper handling of laboratory equipment and chemicals.
8. Conduct basic laboratory experiments with proper laboratory techniques.
9. Working in teams of two, demonstrate use of critical thinking and scientific problem-solving skills in the laboratory including the ability to carry out experiments in a safe and efficient manner. Laboratory reports will be used to test the ability of students to work in teams and to interpret and to communicate results effectively in writing.
10. Students will demonstrate an understanding of acids and bases, and related concepts such as pH and buffers.

Communications:

- NTCC email is the official form of communication used by the college. Email communications from non-NTCC email addresses run the risk of being marked as spam and may not be answered
- Course announcements that occur outside of lecture and lab sessions will be announced via Blackboard's announcement feature. These will be cc'd to students via NTCC email.
- Students are expected to check Blackboard and their NTCC email accounts regularly.
- All grading policies and due dates for online homework assignments are listed in the online homework system.

Institutional/Course Policy:

- Students should expect to be working on assignments outside of class on their own time throughout the entire duration of this course. For each hour that you spend in class, plan to spend a minimum of three hours out of class studying, reading the book, working on homework problems, etc.

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/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.

Tentative Course Timeline (*note* instructor reserves the right to make adjustments to this timeline at any point in the term):

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|----------------|---|
| Week 1 | Matter (including classifying matter and properties, and changes) and Measurement (including scientific method, density, sig figs, and dimensional analysis) |
| Week 2 | Atomic Theory and Periodic Table (including periodic trends) |
| Week 3 | Electromagnetic Spectrum and Electron Configuration |
| Week 4 | EXAM 1 ; Bonding: Ionic Compounds and Covalent Compounds (Formulas and Nomenclature) |
| Week 5 | Bonding: Ionic Compounds and Covalent Compounds (Formulas and Nomenclature) |
| Week 6 | Lewis structures, Molecular Geometry, VSEPR Valence Bond Theory and Molecular Orbital Theory |
| Week 7 | Chemical Composition: Percent Composition, Empirical Formula, Molecular Formula, Balancing, and Types of Reactions(including: Net Ionic equations, oxidation/reduction, precipitation, and acid/base) |
| Week 8 | EXAM 2 ; Chemical Composition: Percent Composition, Empirical Formula, Molecular Formula, Balancing, and Types of Reactions(including: Net Ionic equations, oxidation/reduction, precipitation, and acid/base) |
| Week 9 | Moles, Stoichiometry, Limiting Reactant, and Percent Yield |
| Week 10 | Thermochemistry (including: heat, work, enthalpy, calorimetry, and hess's law) |
| Week 11 | Gases |
| Week 12 | EXAM 3 ; Solutions (Molarity, Dilution, Solution Stoichiometry) |
| Week 13 | Acid/Base |
| Week 14 | Organic and Biochem |
| Week 15 | EXAM 4 |
| Week 16 | Final Exam Review |