Introductory Chemistry I- Chem 1405 (dual credit)

Course Syllabus: Fall 2023

"Northeast Texas Community College exists to provide responsible, exemplary learning opportunities."

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Office Hours (7^{th} period)	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Online**
	2:11PM to 3:01PM	2:11PM to 3:01PM	2:11PM to 3:01PM	2:11PM to 3:01PM	2:11PM to 3:01PM	

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:
A general lab science 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. Successfully 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 (honors) program. It may be taken to prepare for CHEM 1411 but cannot be substituted for CHEM 1411. 4 credit hours.

Prerequisite: MATH 0305 or higher or equivalent.

- **Required Textbook(s):**
  Chemistry, The Central Science by Brown and LeMay, 14th Ed. (eBook provided with tuition payment)
- **Publisher:** Pearson
- **ISBN Number:** 9780134553122
- **Inclusive Access**: We have negotiated with the Publisher to obtain a discounted price for your lecture course materials. Your eBook and **MasteringChemistry Access Code** are included with your tuition and will be available through Blackboard on the first-class day (use the link found in the "Start Here" folder in Blackboard). 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 inclusive 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 Connect Access Code from another vendor. You will receive a refund for the Inclusive Access if you opt out.

Minimum Technology Requirements:
- Access to Pearson MasteringChemistry
- Laptop or computer with webcam
- Access to high-speed 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.

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.

Student Learning Outcomes: Upon completion of this course, students will….

1. Be able to define the fundamental properties of matter; to classify matter, compounds, and chemical reactions; and to identify trends in chemical and physical properties of the elements using the periodic table;

2. Be able to write chemical formulas, to write and balance equations, to use the rules of nomenclature to name chemical compounds, and to define the types and characteristics of chemical reactions;

3. Demonstrate the ability to solve stoichiometric problems, to convert units of measure, and to demonstrate dimensional analysis skills;

4. Obtain and introductory understanding of quantum mechanics, be able to apply the octet rule, draw resonance structures, and use VSEPR, valence bond, and molecular orbital theories;

5. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems, determine the role of energy in chemical reactions, and solve thermochemistry problems; and

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.

Course Timeline

The following schedule provides a tentative* outline of the scope and sequence of the course:
* The instructor reserves the right to adjust this timeline during the term as deemed necessary.

Week 1: Introduction, acknowledgement of syllabus, student questionnaire.
Week 2: Ch 1- Classification of matter, sig.figures, dimensional analysis; Ch 2- atomic theory.
Week 3: Ch 2- Periodic table, chemical formulas, nomenclature; Ch 3-chemical equations.
Week 4: Ch 3- Chemical reactions, molar mass, Avogadro's number, stoichiometry.
Week 5: Ch 4- Properties in solutions, precipitation, neutralization, oxidation-reduction reactions.
Week 6: Ch 4- Oxidation-reduction reaction, molarity, solution stoichiometry.
Week 7: Ch 4- Solution stoichiometry; Ch 5- thermochemistry
Week 8: Ch 5- Enthalpy, enthalpies of reaction.
Week 9: Ch 5- Calorimetry, Hess's law, enthalpy of formation.
Week 10: Ch 6-The nature of light, line spectra, the Bohr model, the uncertainty principle
Week 11: Ch 6- Quantum mechanical model, electron configuration and the periodic table.
Week 12: Ch 7- Effective nuclear charge, atomic size, ionization and periodic trends.
Week 13: Ch 8- Ionic/covalent bonding, bond polarity, Lewis structures; Ch -9 VSEPR
Week 14: Ch 10-Pressure, empirical gas laws, ideal gas law, gas mixtures.
Week 15: Ch 10-Kinetic-Molecular theory, effusion, diffusion
Week 16: Review and Final exam.

Evaluation/Grading

Grades and their weighting will be as follows:

MasteringChemistry & Other assignments	20%
Quizzes	10%
Labs	25%
Exams	30%
Final Exam	15%
Total Course Grade	100%

*Other assignments will include anything assigned by the instructor which does not fit into the other categories.

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

Final course grades are rounded to the nearest whole number percent, and letter grades assigned using the grading scale.

Grades will be posted on Blackboard during the term. If a student has a question concerning a grade, they should email the instructor and ask for clarification.

Course Structure and Overview

Lecture:

This course is a "mixed" dual credit course which allows student to satisfy high school graduation requirements while also earning four college credits at NTCC. Dual credit students will experience the traditional face-to-face class directed by their high school teacher. At the same time these students will have online instruction directed by an NTCC instructor. In this context the term "lecture" applies to both settings. Online instruction is accomplished through reading assignments, instructor developed lessons and tutorials, and third-party resources. Each of these are designed to support and enrich a student's understanding of the topics covered. Online instruction will utilize Blackboard, a learning management system utilized by NTCC as well as many other colleges and universities. The textbook and the online homework system, MasteringChemistry" are essential to this course. "MasteringChemistry" provides tutorials and activities for key topics as well as practice to reach mastery through problems and questions. Information for registering for "MasteringChemistry" and its use can be found in Blackboard.

Communications:

- The most important method of direct communication between dual credit students and the NTCC instructor is by email. Students should use their NTCC email account when communicating with the instructor.
- Course announcements will be made using Blackboard announcements and will be cc'd to student's NTCC email accounts.
- Students should monitor both their NTCC email accounts and Blackboard announcements daily.

MasteringChemistry(Homework)

Homework will be completed using MasteringChemistry online homework system. Students will find links in Blackboard that take them to the appropriate homework assignment in MasteringChemistry. Within MasteringChemistry each assignment will consist of a set of tutorials, activities, and questions which the student must answer online.

Late work- Assignments will have specific due dates. Late assignments will be assessed a 10 % point penalty for each day past the due date. Penalties for deduction *may* be waived if students have an excused absence from school and they communicate with Mr.Trickey the reasons for their absence.

Quizzes

Quizzes will be short and very specific in their scope. The quiz format will vary and may take place in class or may be administered within Blackboard and taken online. The date and topic for each quiz will be announced.

Laboratory Assignments

Work in the laboratory is central to the topic of chemistry. Experiments will reinforce the topics covered in lecture and allows the student to apply the knowledge they have gained to real world problems. Laboratory assignments will be assigned, communicated and graded by the classroom instructor. Experimental work can only take place in the chemical laboratory therefore it is imperative that students make arrangements with their instructors about making up missed laboratory work if they are absent.

Exams

All exams will be announced prior to taking the exam and will be posted online. Each exam will cover assigned readings, class lectures, discussion, homework, and quizzes and in most cases an exam review will be provided. The format of exams will vary but will include multiple choice, short answer, and problem-solving questions. During the semester 3 exams will be administered. Students will be able to utilize instructor provided reference information such as a periodic table and equations during their exams.

Final Exam

The final exam is comprehensive and will cover selected topics discussed during each semester. The format of the final exam will be announced.

Student Responsibilities/Expectations:

- Any assignment, lab, or test that is not completed by the assigned due date or at a later date with instructor approval will be graded as is or assigned a zero.
- The last day to drop the course with a grade of W is **Thursday, November 21, 2023.** 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.**

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."

Academic Ethics

The college expects all students to engage in academic pursuits in a manner that is beyond reproach. Students are expected to maintain complete honesty and integrity in their academic pursuit. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. Refer to the student handbook for more information on this subject.

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 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 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 education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Other Course Policies:
NA