CHEM 1406.001 Introductory Chemistry I

Health Sciences Emphasis

Course Syllabus: Spring 2020

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

Dr. Mary Hearron
Office: UHS Office 162
Phone: 903.434.8296
Email: mhearron@ntcc.edu

Dr. Jim Archer
Office: MS 126 (Tues only)
Laboratory
jarcher@ntcc.edu

Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday	Online
	11:30 – 12:20 PM	9:30-10:30 AM 1:30-5:00 PM	11:30 – 12:20 PM 1:30-5:00 PM	9:30-10:30 AM 1:30-5:00 PM	none	email anytime

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities. Any modifications will be clearly communicated to students.

Course Description:
4 credit hours. 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:
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; 3rd Edition

You will still need to purchase a print copy of the lab manual from the NTCC Bookstore.
Introductory Chemistry Lab Manual: CHEM 1406 NTCC, Hearron

Additional <u>Required</u> Supplies:
Safety Goggles: Required for participation in all lab activities.
Scientific Calculator: A TI-30Xa is the recommended choice. Programmable calculators, graphing calculators, cell phone calculators nor smart watches will be allowed during any quiz or exam in the course.

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:

Upon successful completion of this course, students should:

1. Demonstrate the ability to convert units of measure, including dosage, nutritional, and temperature conversions;
2. 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;
3. Demonstrate an understanding of atomic theory and be able to use the octet rule and VSEPR theory to predict chemical formulas and structures.
4. Write chemical formulas and use the rules of nomenclature to name inorganic chemical compounds.
5. Define the types and characteristics of chemical reactions, write and balance equations.
6. Be able to solve and apply simple gas law problems using Boyle's, Charles, and Gay-Lussac's Laws
7. Be able to solve chemical equations for solution formation and solution concentration.
8. Identify strong acids and bases, conjugate acid/base pairs including the effect of concentration on equilibrium using LeChatelier's Principle.
9. Be able to calculate pH and/or hydronium ion concentration.
10. Be able to distinguish organic from inorganic compounds, identify functional groups and name simple organic compounds.
11. Be able to identify the fundamental structure and function of carbohydrates, lipids, proteins and nucleic acids and their building blocks.
12. Demonstrate safe and proper handling of laboratory equipment and chemicals.
13. Carry out experiments and experimental work completely and accurately and calculate, interpret and communicate experimental results clearly in lab notebooks or written reports.

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:	Proteins
Week 15:	DNA
Week 16:	Final Exam

Evaluation/Grading Policy:

40% Regular Exams
25% Laboratory
20% Final Exam
10% Assignments*
5% SI Participation
100% Total

* 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.

Grading Scale

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

Tuesday, April 9 is the last day to withdraw from the course with a grade of "**W**". Students who withdraw from the lecture must also withdraw from the lab. If you stop attending class and fail to officially withdraw, expect to earn a grade of "**F**" in the 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 will need a reliable scientific calculator for exams and quizzes. Programmable calculators, graphing calculators, cell phone calculators and smart watches are not allowed. Sharing calculators will not be permitted.

All work that is submitted for grading must be **neat and legible**. Any work that is illegible will not be graded.

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

Quizzes and Assignments:
A quiz may be given at the beginning or ending 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. Mastering Chemistry assignments have due dates published in Mastering Chemistry which you will access through the Bb section.

Laboratory:
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 10 experiments must be completed and receive a non-zero grade in order to pass this course. A schedule of experiments will be provided as a separate handout. There is no make-up lab for missed experiments.

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 or skirts, closed shoes (no exposed skin or sock), shirts that cover their shoulders, and approved safety glasses/goggles at all times in the lab. Long hair should be pulled back. Failure to follow laboratory safety protocols could result in injury to yourself or others and in reduction of your laboratory grade. Students not dressed appropriately for lab may be asked to leave. If asked to leave, students will earn a grade of zero on that experiment.

Prelaboratory Assignments accompany each experiment in the lab manual and must be completed prior to the laboratory period. ***Prelaboratory Assignments are due at the beginning of the laboratory period.*** Students not turning in a complete Prelaboratory Assignment will not be allowed to participate in that experiment and will receive a grade of zero on that experiment. Unless otherwise stated, Regular Experiment reports are due at the end of the laboratory period.

Questions in the lab manual that require written explanations must be answered in complete, thoughtful sentences. Failure to do so will result in loss of points.

Calculations in the lab report must show all of the steps necessary to generate the answers provided, including proper use of units and significant figures. Failure to do so will result in loss of points.

Lab reports that are sloppy and/or illegible will not be graded; although, some points may be earned for completing the experiment. Lab reports must be completed neatly in pencil. Errors must be completely erased. Lab reports written in pen and lab reports with scratched-out or scribbled-out writing will not be accepted and will earn zero points.

Copying answers on any work will not be tolerated. While working as a team, you will be performing the experiments and collecting data collaboratively, but you are required to do all of your own calculations and write-ups. Prelaboratory Assignments and Lab Reports that appear to have answers copied from other students or internet sources or that appear to have cheated in any way will earn a grade of zero.

Students who leave lab early without permission from the instructor and their lab partner(s) will incur a point reduction. Keep in mind that teamwork is 10% of your lab grade!

You are expected to attend all laboratory periods. Failing to attend lab will earn you zero points for that experiment. "I have to work" is not an acceptable excuse for missing a laboratory period.

Supplemental Instruction:
Supplemental Instruction (SI; aka tutoring) is required for this course. Many hours of FREE SI tutoring are available each week. Beginning on the Monday of Week 2 of the semester (**Monday, January 28**) students in the course are required to attend 2 hours of SI tutoring each week (except during Spring Break and Finals Week). The SI tutoring session can be used to work on your Mastering Chemistry assignments or to study before exams, etc. Students earn points for productive time spent in the tutoring session; and SI tutoring points are worth 5% of the course grade. Points are earned at the rate of 2 points per 30-minute session. A total of 112 points can be earned for the semester. To receive

points, students must sign in with the tutor on the sign-in sheet upon arrival and sign out with the tutor when leaving. ***Students that are not both signed in and signed out will not earn any points for that session.*** SI tutors are chemistry majors who have earned high grades in CHEM courses and will help you master the material covered in lecture or the assigned Mastering Chemistry problems. The SI tutoring sessions are available at the following times and locations:

Mon/Wed - 1100am-1230pm - MS 104
Mon/Tues - 300-630pm - MS 106
Thursday - 200-630pm - MS 106

Student Responsibilities/Expectations:
Like all colleges, Northeast Texas Community College strives to be a "community of scholars." Please remember that you and all 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 students throughout the lecture and laboratory portions of this course.

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 making a commitment to meet the following classroom expectations:

a) Attend ALL classes – physically and mentally. Wherever you are, be all there.
b) Be on time for class. Attitude is not everything, but it is very important. Remain in class for the entire instructional period.
c) A good student acts like a good student; Be an active learner – participate in class. Be attentive, answer questions, and ask questions.
d) Read ahead. This will help make the next lecture much more effective.
e) All cellular phones and laptop computers must be turned off during class time.
f) Realize that I do not GIVE grades. You EARN grades based upon your performance. That performance will be enhanced by participating in class, laboratory and tutoring sessions so that your mastery of the content successful.
g) Be respectful of yourself, your classmates, the SI tutors and your instructors.
h) Learning is hard work, but it is also invigorating and fun. Work hard and have fun doing so.

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 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.

Course Calendar:

WEEK	DATE	LECTURE ASSIGNMENT	LAB (T 1:30 PM)
1	Jan 21	Intro & Chp. 1 Chemistry Basics 1.1, 1.2	Intro to Lab; Check In
	Jan 23	Chp. 1 Chemistry Basics 1.3, 1.4	
2	Jan 28	Chp. 1 Chemistry Basics 1.3, 1.4	Lab 1 Safety
	Jan 30	Chp. 1 Chemistry Basics 1.5, 1.6	
3	Feb 4	Chp. 2 Atoms and Radioactivity 2.1-2.4	Lab 2 Measurement
	Feb 6	Chp. 2 Atoms and Radioactivity 2.5-2.7	
4	Feb 11	**Test 1** (Chps. 1 & 2)	Lab 3 Mineral and Fat Content of Milk
	Feb 13	Chp. 3 Compounds 3.1-3.3	
5	Feb 18	Chp. 3 Compounds 3.4-3.5	Lab 4 Cereal Minerals
	Feb 20	Chp. 3 Compounds 3.5	
6	Feb 25	Chp. 3 Compounds 3.6-3.7	Lab 5 Calorimetry
	Feb 27	Chp. 5 Chemical Reactions	

7	Mar 3 Mar 5	Chp. 5 Chemical Reactions **Test 2** (Chps. 3 & 5)	Lab 6 Empirical formula
8	Mar 10 Mar 12	Chp. 4 Organic Compounds Chp. 4 Organic Compounds	Molecular Models-Handout
		SPRING BREAK March 16-20	
9	Mar 24 Mar 26	Chp. 6 Carbohydrates 6.1-6.4 Chp. 6 Carbohydrates 6.5-6.7	Lab 7 Mono and Polysaccharides
10	Mar 31 Apr 2	Chp. 4, 6 continue **Test 3** (Chps. 4 & 6)	Lab 8 Condensation Rx.
11	Apr 7 Apr 9	Chp. 7 Gas Laws, Solubility, Lipids Chp. 7 Gas Laws, Solubility, Lipids	Lab 9 Osmosis
12	Apr 14 Apr 16	Chp. 8 Solution Chemistry Chp. 8 Solution Chemistry	Lab 10 Solutions
13	Apr 21 Apr 23	Chp. 8 Solution Chemistry **Test 4** (Chps. 7 & 8)	Lab 11 Lactose
14	Apr 28 Apr 30	Chp. 9 Acids, Bases, & Buffers Chp. 9 Acids, Bases, & Buffers	Lab 12 Antacids
15	May 5 May 7	Chp. 10 Proteins Chp. 11 DNA	Lab practical & check-out
16	**May 12 FINAL EXAM**		**11:00 AM**

*This is a tentative schedule. Adjustments may be made by the instructor as necessary.