I. INTRODUCTION

A. This laboratory includes basic laboratory experiments supporting theoretical principles presented in Chemistry 1411 lecture, General Chemistry 1 including introduction to the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports.

B. This laboratory is part of a course that is required for students majoring in the sciences, health sciences, and engineering. The course may or may not be used as an elective. Please check your degree plan to determine the status of this course in your program of study.

C. The course is occupationally related as serves as preparation for careers in teaching, research, medicine, agriculture, and other science-related fields as well.

D. Prerequisite: MATH 1314 (College Algebra) with a grade of “C” or better within the last 5 years. High school chemistry is strongly recommended.

II. LEARNING OUTCOMES

Upon successful completion of this course, General Chemistry 1, the student will:

A. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.

B. Demonstrate safe and proper handling of laboratory equipment and chemicals.

C. Conduct basic laboratory experiments with proper laboratory techniques.

D. Make careful and accurate experimental observations.

E. Relate physical observations and measurements to theoretical principles.

F. Interpret laboratory results and experimental data, and reach logical conclusions.

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G. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.

H. Design fundamental experiments involving principles of chemistry.

I. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

III. INSTRUCTIONAL MATERIALS

A. The instructional materials identified for this course are viewable through www.ctcd.edu/books.

IV. COURSE REQUIREMENTS

A. The student should bring the laboratory manual, textbook, and all other necessary material to each lab session.

B. Regular and punctual attendance is essential for passing this course! Attendance will be checked at the beginning of each class. Do not be late to class! Coming to class late may adversely affect your grade and may result in your PERMANENT removal from the class! A student will be considered tardy if he is not in his seat when attendance is checked at the beginning of class. If a student is more than 15 minutes late for lab, he will be considered absent.

If a student is late to lab and misses any or all of the pre-lab talk, the instructor may not allow the student to perform the scheduled lab experiment. This may result in a grade of zero for that experiment.

C. Academic Honesty: All students are required and expected to maintain the highest standards of scholastic honesty in the preparation of all lab work and examinations. Examples of scholastic dishonesty include plagiarism, collusion, and cheating. Students guilty of scholastic dishonesty will be administratively dropped from the course with a grade of “F” and subject to disciplinary action, which may include suspension and expulsion.

Copying any part or all of another student’s lab report is considered cheating. Possession or use of a lab report from a previous semester is also considered cheating.

D. Students must comply with laboratory safety regulations. In particular, the student must wear safety goggles and apron while working in the laboratory. Each lab period, students found not wearing safety goggles over their eyes will be given one warning. Students found not wearing their safety goggles a second time during that lab period will be dismissed from lab immediately. The student will receive a zero for that lab period. Any zero grades for not wearing safety goggles will not be dropped. Students will not be permitted to wear shorts, short skirts, short dresses,
or sandals in the lab. **All attire must come down to the ankles.** Do not wear baggy clothing. Tank tops and halter tops are not permitted in lab. Shoulders and entire back must be covered. Only closed toe and closed heel shoes are allowed in the laboratory. The shoe must cover the entire foot.

The student is also responsible for the equipment issued him or her. The student will be assigned a drawer which can be locked for protection of the equipment. Required safety goggles and apron may be purchased at the CTC Bookstore. Safety goggles not purchased from the CTC Bookstore must be approved by the instructor. Additional safety rules will be provided on a separate handout.

E. Each student must attend only the lab section for which he/she is registered.

F. Students must complete laboratory exercises before leaving the laboratory, unless waived by the instructor. Laboratory reports are due at the end of the lab period. Students are required to use proper grammar on all lab reports. All questions should be answered in complete English sentences. Each student must bring his/her own individual lab manual to each lab session.

G. **There will be no make-up labs for any reason.** If a student misses a lab experiment for any reason, he will receive a zero for that experiment. However, the lowest lab experiment grade will be dropped as long as the lowest grade is not a result of violation of lab rules and regulations. Quiz and exam grades will not be dropped. Students may **not** attend a different lab section to make up missed lab work.

H. Some lab experiments may require the student to write a formal lab report. The format for such reports will be provided on a separate handout.

I. Refer to the lab manual for further lab requirements and safety rules.

V. LABORATORY EXAMINATIONS

A. There will be **two lab exams.** No make-up exams will be given for any reason! The exams may include any or all of the following types of questions: problem solving, multiple choice, true-false, fill in the blank, matching, discussion, identification, or essay. **A nongraphing scientific calculator is the ONLY calculator that will be allowed on lab exams and quizzes!** The sharing of calculators will not be permitted during lab exams.

B. During exams, students may not leave the room. Students may not wear caps, hats, or visors during exams and quizzes. Cell phones and all electronic devices (except calculator) must be turned off and stored out of sight during exams.

VI. SEMESTER GRADE COMPUTATIONS
Lecture Exam 1  15%
______________________________
Lecture Exam 2  15%
______________________________
Lecture Exam 3  15%
______________________________
Lecture Exam 4  15%
______________________________
Final Exam    20%

Laboratory Average  20%
Total              100%

Laboratory Average will be determined as follows:

<table>
<thead>
<tr>
<th>Lab Exam 1 (20%)</th>
<th>Experiment average (60%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Exam 2 (20%)</td>
<td>Total (100%)</td>
</tr>
</tbody>
</table>

The lowest experiment grade will be dropped before calculating the experiment average. Low lab grades resulting from tardiness or safety rule violations will not be dropped. Lab exam grades will not be dropped.

Course grades will be assigned according to the following scale:

90-100 = A
80-89  = B
70-79  = C
60-69  = D
≤ 59   = F

VII. NOTES AND ADDITIONAL INSTRUCTIONS FROM THE INSTRUCTOR

A. Course withdrawal: It is the student’s responsibility to officially drop/withdraw from a class if circumstances prevent attendance or if the student decides not to continue with the course and this must be done before the withdrawal date. An
instructor cannot initiate a withdrawal or drop a student based on the student’s request. GoArmyEd students should contact their ACES counselor before withdrawing and withdraw through the GoArmyEd portal. All other students who desire to or must officially withdraw from a course on or after the first scheduled class meeting must file an Application for Withdrawal with the local CTC representative by the last date to withdraw. Students enrolled in distance learning courses and who do not have access to a local CTC representative should submit a withdrawal form to EaglesOnCall@ctcd.edu or the CTC Records Office in Killeen, Texas.

Applications for Withdrawal will be accepted at any time before the completion of the 12th week of classes for 16-week courses, the ninth week for 12-week courses, the sixth week of classes for eight-week courses, or the third week of classes for five-week courses.

For non-GoArmyEd active military students, the effective date of withdrawal is the filing date with the Education Center. For all other students, the effective date of withdrawal is the date that the withdrawal application is received by the Central Texas College representative.

Students who used financial aid, military tuition assistance, VA benefits, or other non-personal funds may be required to repay tuition and fees to the funding agency. For specific repayment requirements, contact the Office of Student Financial Aid or Veterans Services Office before withdrawing. Military tuition assistance students should visit their military Education Center or Navy College Office.

Students may not withdraw from a class for which the instructor has previously issued a grade of “F.”

B. Administrative Withdrawal: A student may be administratively withdrawn by a designated member of the administrative staff of the College under the following conditions:

- The student has been placed on Academic Suspension or Disciplinary Suspension;
- The student has an outstanding financial obligation owed to the college;
- The student registered for a course without the required prerequisite or departmental permission.

The college is under no obligation to refund tuition and fees, or other costs associated with a student who is administratively withdrawn.

C. Incomplete, Course in Progress Grade: The College catalog states, "An incomplete grade may be given in those cases where the student has completed the majority of the course work but, because of personal illness, death in the immediate family, or military orders, the student is unable to complete the requirements for a course..." Prior approval from the instructor is required before the grade of "IP" for Incomplete is recorded. A student who merely fails to show for the final
examination will receive a zero for the final and an "F" for the course.

D. Cellular Phones and other Electronic Devices: Cellular phones and other electronic devices (with or without associated headsets) will be turned off and put away while the student is in the classroom or laboratory. Making and/or receiving cell phone calls or sending and/or receiving text messages during lecture or lab is strictly forbidden. If a student’s cell phone rings or makes any noise during an exam, he/she will be considered finished with the exam at that time and must turn it in. If a cell phone rings or makes any noise during lab, the student will be considered finished with the experiment at that time and must turn it in. Students may not use phones or tablets to take pictures or record videos of information in lecture or lab. Failure to adhere to this policy may result in disciplinary action. For emergencies or students on call, see (G) below.

E. American’s With Disabilities Act (ADA): Disability Support Services provide services to students who have appropriate documentation of a disability. Students requiring accommodations for class are responsible for contacting the Office of Disability Support Services (DSS) located on the central campus. This service is available to all students, regardless of location. Explore the website at [www.ctcd.edu/disability-support](http://www.ctcd.edu/disability-support) for further information. Reasonable accommodations will be given in accordance with the federal and state laws through the DSS office.

F. Instructor Discretion: The instructor reserves the right of final decision in course requirements.

G. Civility: Individuals are expected to be cognizant of what a constructive educational experience is and respectful of those participating in a learning environment. Failure to do so can result in disciplinary action up to and including expulsion. Minimal civility includes:

1. Being in class on time;
2. Staying in class for the entire class period;
3. Leaving early occurs only after informing the teacher, prior to class, of an unavoidable conflict requiring your early departure (if possible, position yourself close to the door for a minimum disruption to the class);
4. Avoiding such uncivil conduct as talking, sleeping, reading papers/magazines, or working on some other class homework assignment; and
5. Using socially acceptable language in classroom discussions.

H. Emergency messages will be delivered to students in classes by the Student Life Office; the Student Life Office number is 526-1258. Emergency messages can also be given to students through the science department office by calling 526-1288 for delivery to the classroom.

NOTE: The procedures stated for this course are subject to change in the event of extenuating circumstances.
VIII. LABORATORY OUTLINE

A. Significant Figures, Scientific Notation, Conversions, Etc.
B. Laboratory Safety
C. The Densities of Liquids and Solids
D. Heat Effects and Calorimetry
E. Paper Chromatography
F. Physical Properties
G. Formula Writing and Nomenclature
H. Determination of a Chemical Formula
I. Classification of Chemical Reactions
J. Identification of a Compound Using Stoichiometry
K. Determination of the Percent of Potassium Chlorate in a Mixture
L. Acids and Bases
M. Experimental Determination of the Gas Law Constant