COURSE NUMBER: CHEM 1411

COURSE TITLE: General Chemistry I

CREDIT HRS: 4  LECTURE HRS: 3  LAB HRS: 3  CLN/REC HRS: 1

PREREQUISITE: Pass Reading requirement of TSI; Math 1314 within the last five years with a grade of C or better, and either one year of high school chemistry or CHEM 1405 within the last five years with a grade of C or better.

CO-REQUISITE: Concurrent enrollment in CHEM 1411 (laboratory) and CHEM 1411 (recitation). You may repeat this course only once after receiving a grade, including W.

COURSE DESCRIPTION:
A classical chemistry course designed for science majors, pre-medical, dental or engineering students. Topics include stoichiometry, ideal gas behavior, atomic theory, periodic trends, VSEPR theory, thermochemistry and bonding theory. Laboratory exercises reinforce concepts presented in class and develop basic lab skills.

TEXTBOOK: Chemistry – Structure and Properties, by Nivaldo J. Tro

SMART WORK HOMEWORK:
This course might involve online homework and would require you to have a pass code for Smart Work. Consult your instructor for further details.

SUPPLIES:
• Scientific calculator that has function keys for natural logarithms (ln key) and base 10 logarithms (log key) and perhaps other features for statistics, %, etc.


EXPECTED STUDENT LEARNING OUTCOMES:
Upon successful completion of this course, students will:

1. Define the fundamental properties of matter.
2. Classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Identify trends in chemical and physical properties of the elements using the Periodic Table.
5. Describe the bonding in and the shape of simple molecules and ions.
7. Write chemical formulas.
8. Write and balance equations.
9. Use the rules of nomenclature to name chemical compounds.
10. Define the types and characteristics of chemical reactions.
11. Use the gas laws and basics of the Kinetic Molecular Theory to solve gas problems.
12. Determine the role of energy in physical changes and chemical reactions.
13. Convert units of measure and demonstrate dimensional analysis skills.
14. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
15. Demonstrate safe and proper handling of laboratory equipment and chemicals.
16. Conduct basic laboratory experiments with proper laboratory techniques.
17. Make careful and accurate experimental observations.
18. Relate physical observations and measurements to theoretical principles.
19. Interpret laboratory results and experimental data, and reach logical conclusions.
20. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
21. Design fundamental experiments involving principles of chemistry.
22. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

A. Using critical thinking, explain and describe qualitatively, quantitatively and symbolically chemical compounds (including formulas and names) and different types of chemical reactions. (Critical Thinking, Communication Skills, and Empirical/Quantitative)

B. Determine and explain types of bonding, geometry, bond strength, and polarity. (Communication Skills and Empirical/Quantitative)

C. Apply different atomic theories and models to predict and explain periodic trends. (Critical Thinking and Empirical/Quantitative)

D. Qualitatively and quantitatively describe properties of matter in terms of states and classification (pure vs. mixture). (Empirical/Quantitative)

E. Use laws of thermodynamics critically to qualitatively and quantitatively express heat changes associated with different processes. (Critical Thinking and Empirical/Quantitative)

F. Safely work in teams in the laboratory to collect data (both electronically and manually), make measurements, make observations and conduct reactions; qualitatively and quantitatively and critically analyze lab data and communicate results using both written and electronic formats. (Critical Thinking, Communication Skills, Empirical/Quantitative, and Teamwork)

**COURSE REQUIREMENTS:**
Written exams, recitation and lab participation and other assignments as given by instructor.

**COURSE FORMAT:**
May include but not limited to lectures, transparencies, videos, computer software, demonstrations, hands-on exercises, and student presentations.

**METHOD OF EVALUATION:**
Lecture average = 70% final grade
Recitation = 10% final grade
Lab average = 20% final grade
100% TOTAL
Lecture average will consist of 4 equally weighted exams (including final). It may also consist of quizzes and/or assignments. See lecture instructor for specific breakdown of lecture component.

**RECITATION:**
Recitation is a component of this course that enhances critical thinking and problem solving. This component will include, but is not limited to, some hands-on activities as well as group activities/discussions, and writing. **Attendance and participation will impact your grade.**

**ATTENDANCE POLICY:**
Students should attend all classes, labs, and recitations. Your attendance and class participation will impact your grade. Ask your professor for the policy that pertains to your course section. Please see the schedule of classes for the last day to withdraw. Religious Holy Days: refer to Chapter 6 Procedures, section 23 in current CCCCD Student Handbook.

**ADA STATEMENT:**
It is the policy of Collin County Community College to provide reasonable and appropriate accommodations for individuals with documented disabilities. This College will adhere to all applicable Federal and state laws, regulations and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student’s responsibility to contact the ACCESS office, (room G-200, Spring Creek Campus) or 972.881.5898, in a timely manner if he/she desire to arrange for accommodations.

**ACADEMIC ETHICS:**
The college may initiate disciplinary proceedings against a student accused of scholastic dishonesty. Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or the award of a degree, and/or the submission of material as one’s own work that is not one’s own. Scholastic dishonesty may involve one or more of the following acts: cheating, plagiarism, collusion, and/or falsifying academic records.

Cheating is the willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, using someone else’s work for assignments as if it were one’s own, copying computer or Internet files, and any other dishonest means of attempting to fulfill the requirements of a course.

Plagiarism is the use of an author’s words or ideas as if they were one’s own without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.

Collusion is intentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate during an examination; removing tests or answer sheets from a test site, and allowing a classmate to copy answers.