



RANGER COLLEGE
STEPHENVILLE, TEXAS

COURSE SYLLABUS

GENERAL CHEMISTRY I

CHEM 1411

4 credit hours

INSTRUCTOR:

Kenya Kresta

INSTRUCTOR: Kenya Kresta
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HOURS: Monday through Friday, 12:00 pm -1:00 pm. Other times by appointment.

I. Texas Core Curriculum Statement of Purpose

Through the Texas 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.

II. Course Description

General Chemistry I (3-3) 4005015403 General principles, problems, fundamental laws, and theories. Course content provides a foundation for work in advanced chemistry and related sciences. Recommended for pre-professional and science majors. Credit 4 semester hours.

III. Required Background or Prerequisite

Prerequisite: MATH 1314 College Algebra (3 SCH version) or equivalent academic preparation.

IV. Required Textbook and Course Materials

Text: Brown, Theodore E., H. Eugene LeMay, and Bruce E. Bursten, et al. Chemistry: The Central Science. ISBN 978-0-321-69672-4. Upper 12th Edition (2012). Upper Saddle River, NJ: Prentice Hall. (required for homework and class)

Solutions Manual: Brown, Theodore E., H. Eugene LeMay, and Bruce E. Bursten, et al. Solutions, Chemistry: The Central Science. 12th Edition (2012). Upper Saddle River, NJ: Prentice Hall. (Optional)

Calculator: Scientific or graphing calculator (required for homework and class). TI -30XIIS is sufficient. You may not use your phone during class, tests or lab as a calculator.

Safety Glasses: Required for all laboratory experiences. You may purchase these at Wal-Mart and most hardware stores. You will not be allowed to do lab without them. Please bring them with you to lab during the second week of class. If you wear clear prescription glasses that cover eyes sufficiently you may wear those. No sunglasses please.

V. Course Purpose

General Chemistry I will focus on describing, explaining, and predicting natural phenomena using the scientific method and involves the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

VI. Learning Outcomes

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

VII. Core Objectives

This course meets the following of the six Core Objectives established by Texas:

- ☒ **Critical Thinking Skills (CT)** – Creative thinking, innovation, inquiry, and analysis; evaluation and synthesis of information

- Communication Skills (COM)** – effective development, interpretation and expression of ideas through written, oral, and visual communication
- Empirical and Quantitative Skills (EQS)** – The manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- Teamwork (TW)** – The ability to consider different points of view and to work effectively with others to support a shared purpose or goal
- Social Responsibility (SR)** – Intercultural competence, knowledge of civic responsibility, and the ability to engage effectively in regional, national, and global communities
- Personal Responsibility (PR)** – The ability to connect choices, actions, and consequences to ethical decision-making

VIII. Methods of Instruction

Material will be presented in a variety of teaching styles. Chapter notes will be given via power point and white board lecture presentations. Time will be given for classroom discussions and questions and answers. Some small group work will be done in class to build collaborative study groups.

Labs are due the next lab session. Some of these laboratory exercises will require multiple days in a row to complete and will be due as indicated by instructor. Exams may be given during lecture or lab times. Be prepared for tests. Be prepared to stay the entire class and lab time each day.

IX. Methods of Assessment

Grades for the course are calculated using the following guidelines:

- 25 percent (EQS, COM, CT, TW) -- daily work (quizzes, homework problems from the text, laboratory write-ups),
- 50 percent (CT, COM) -- lecture exams (multiple choice questions, short answer and problems),
- 25 percent (CT, COM) -- comprehensive final exam.

No make-up work or make-up tests will be given for unexcused absences. The lowest daily grade will be dropped. Any academic dishonesty on labs, quizzes or exams will result in a zero on that assignment.

Grading scale: A = 90-100% B = 80-89 C = 70-79 D = 60-69 F = Below 60

X. Course/Classroom Policies

The student learner is expected to attend and participate in all class and laboratory activities. Respectful and mature behavior is required by all students. The class meets daily throughout the

semester and includes lab and lectures. Hands-on lab experiences are embedded throughout the semester to align with course content. Some labs will take the entire class time while others will be paired with lecture. Dates are subject to change. Make-up labs will be scheduled through the instructor and completed before or after class at a time agreed upon by the instructor and student.

Students will follow the laboratory safety procedures handed out to them on the first day of lab. Any misbehavior or intentional violation of safety rules will result in the student being asked to leave the laboratory area.

Regular and punctual attendance in all classes and labs is considered essential for optimum academic success. If the student has the equivalence of three weeks of unofficial absences, the instructor may drop the student from the course with a grade of F (Ranger College General Catalog).

Students are expected to be seated by the beginning of the lecture period. Excessive tardies (6) may be considered as absences. Excessive unexcused absences (6) may result in a grade of I (incomplete) and may result in dismissal from the course with a grade of F. It is your responsibility to inform the instructor of an excused absence. An absence is excused if you are excused by the Dean to participate in an authorized College activity or if you have a valid medical excuse. A doctor's note is necessary to make up a test.

Any student who is disruptive to the class will be dismissed from the class and may be dismissed from the course. Any student found with unauthorized notes (cheat sheets, electronic devices, etc.) during an exam or copying from another student's exam will be subject to disciplinary action. Do not leave the room or have a cell phone out during an exam. Any student misconduct will be reported to the Dean of Student Services (See Student Handbook).

Electronic devices (computers, phones) may be used in class with special permission and with the understanding that they will be used only for class material. Misuse of cell phones, or other electronic devices, in class may lead to the student having their grade lowered for this course.

No tobacco use is permitted in the building.

Most of the chapters in the text are completed in a sequential order. A primary goal of this class is to encourage students to develop a sense of self and group accountability. The students are required to purchase texts, solution manuals are optional, and labs will be provided. All students are asked to maintain a portfolio/notebook in which to keep their completed work including quizzes and laboratory reports.

When each new topic is introduced, the correlated homework problems are assigned from the textbook. These assignments are meant to be practice for the quizzes and tests so answers are provided for feedback purposes. Many students will try, in the beginning, just to "look" over the homework, but quickly learn to work within a study group to solve the problems. Students are often asked to share and defend their solutions with the class. Students are encouraged to make contributions to problem-solving in this way to reinforce that the teacher is not the only one who

can work the problem. Remember, I am available most class days for tutorial help. If additional tutorial times are needed please ask.

Students are required to complete a detailed, comprehensive report of each laboratory experiment. These reports include hypothesis, procedure, collected data and observations, calculations and a valid conclusion. Some experiments are done individually, but most are done with a partner. Partners can be rotated to keep ideas and experiences varied and fresh. Both members of the group are required to manipulate the laboratory equipment and record their own observations throughout the course of the experiment and turn in their own paper.

XI. Course Outline/Schedule

<u>Week</u>	<u>Lecture Topic</u>
1	Chapter 1 Introduction: Matter and Measurement
2 & 3	Chapter 2 Atoms, Molecules, and Ions Test Ch. 1 & 2
4	Chapter 3 Stoichiometry: Calculations
5	with Chemical Formulas and Equations Test Ch. 3
6	Chapter 4 Aqueous Reactions and
7 & 8	Solution Stoichiometry Test Ch. 4
9	Chapter 5 Thermochemistry
10	Con't. Ch. 5
10 & 11	Chapter 6 Electronic Structure of Atoms
12	Chapter 7 Periodic Properties of the Elements Test Ch. 5, 6 & 7
13	Chapter 10 Gases
14	Thanksgiving Break

15	Con't. Ch. 10
16	Semester Exam Review
	Comprehensive Final Exam

Laboratory Experiments

- 1 Laboratory Safety and Procedures
- 2 Measurements & Significant Figures
- 3 Density of Unknown Metals & Liquids
- 4 Mass & Mole Relationships with Basic Stoichiometry
- 5 Types of Chemical Reactions
- 6 Activity Series of Metals and Halogens
- 7 Aluminum Wire as an Excess Reactant
- 8 Endothermic v. Exothermic Reactions
- 9 Heat of Reaction: Hess' Law
- 10 Flame Test Used to Identify Metallic Salts
- 11 It's in the Cards: A Periodic Table Activity
- 12 Race of the Gases: A Study of Graham's Law
- 13 Ideal Gas Law Online NASA Lab

XII. Non-Discrimination Statement

Admissions, employment, and program policies of Ranger College are nondiscriminatory in regard to race, creed, color, sex, age, disability, and national origin.

XIII. ADA Statement

Ranger College provides a variety of services for students with learning and/or physical disabilities. Students are responsible for making initial contact with the Ranger College

Counselor, Gabe Lewis (glewis@rangercollege.edu). It is advisable to make this contact before or immediately after the semester begins.