

South Plains College
Common Course Syllabus: CHEM 1406 (Fall 2026)

Department: Science

Discipline: Chemistry

Course Number: CHEM 1406

Course Section: 006

Course Title: Introductory Chemistry I

Available Formats: Hybrid (Lectures on Blackboard, Labs Face to Face)

Campuses: Levelland

Instructor: Dr. Li Xiang Office: S117
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Please communicate with me by SPC emails. I will respond within 24 hours.

Office Hours: Monday: 12:15 pm – 12:30 pm; 3:45 pm - 4:00 pm
Tuesday: 12:15 pm – 3:15 pm
Wednesday: 12:15 pm – 12:30 pm; 3:45 pm – 4:00 pm
Thursday: 9:00 am – 11:00 am
Friday: 9:00 am – 11:00 am

Course Description: Survey course introducing chemistry. Topics in lectures may include inorganic, organic, biochemistry, food/physiological chemistry, and environmental/consumer chemistry. It is designed for allied health students and for students who are not science majors. Basic laboratory experiments supporting theoretical principles presented in lectures are performed to introduce to students the scientific method, experimental design, data collection and analysis, and preparation of laboratory reports. Note: **This course may not be substituted for CHEM 1411.**

Prerequisite: None

Credit: 4 **Lecture:** 3 **Lab:** 3

Textbook: Karen C. Timberlake, "Chemistry: An Introduction to General, Organic, and Biological Chemistry", 13th Edition (**optional, all of the lecture notes will be posted on Blackboard**).

Supplies:

- **CHEM1406 and 1411 Lab Manual** (**pdf of the lab manual will be posted on Blackboard**).
- Safety glasses/goggles (**provided**).
- Scientific calculator (**required**, usage of cell phones is not allowed during exams).

Minimum Computer Requirements:

- Personal computer
- High-speed internet connection
- Web browser: Google Chrome works best
- Microsoft Office (Word and PowerPoint)

Core Curriculum Objectives addressed:

- **Communications skills**—to include effective written, oral and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Empirical and quantitative competency skills**—to manipulate and analyze numerical data or observable facts resulting in informed conclusions
- **Teamwork skills**—to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Student Learning Outcomes:

From Lecture:

1. Convert units of measure and demonstrate dimensional analysis skills.
2. Define the fundamental properties of matter and classify matter, compounds, and chemical reactions.
3. Determine the basic nuclear and electronic structure of atoms.
4. Distinguish between ionic and covalent compounds and name the different compounds.
5. Identify trends in chemical and physical properties of the elements using the periodic table.
6. Determine the role of energy in physical and chemical reactions.
7. Use the mole concept to determine the number of atoms, moles, grams, and solve elementary stoichiometry-based calculations.
8. Determine the concentrations of solutions using percentage and molarity designations.
9. Use various characteristics of a solution to identify it as an acid or base.
10. Identify and name various organic compounds.
11. Identify and explain the functions of carbohydrates, lipids, and proteins.

From Lab:

1. Use basic apparatus and apply experimental methodologies used in the chemistry laboratory.
2. Demonstrate safe and proper handling of laboratory equipment and chemicals.
3. Conduct basic laboratory experiments with proper laboratory techniques.
4. Make careful and accurate experimental observations.
5. Relate physical observations and measurements to theoretical principles.
6. Interpret laboratory results and experimental data, and reach logical conclusions.
7. Record experimental work completely and accurately in laboratory notebooks and communicate experimental results clearly in written reports.
8. Design fundamental experiments involving principles of chemistry.
9. Identify appropriate sources of information for conducting laboratory experiments involving principles of chemistry.

Student Learning Outcomes Assessment:

A few topics/questions will be selected from the exams to assess the student learning outcomes at the end of semester.

This course partially satisfies a Core Curriculum Requirement:

- Life and Physical Sciences Foundational Component Area (030)

Course Evaluation/Grading Policy:

Grading will be traditional: A = 90-100
B = 80-89
C = 70-79
D = 60-69
F = below 60

The grade distribution will be: 3 midterm exams: 60%
13 lab experiments: 13%
2 lab quizzes: 13%
1 final exam: 14%

Lab attendance will count for 13% of the final grade. A completed lab will receive a grade of 100. A missed lab will receive a grade of zero. The labs must be completed on the days they are scheduled. There will be no make-ups for the labs. However, **2** grades of zero will be dropped and replaced by 100 at the end of the semester.

Exams: The 3 midterm exams will be conducted face to face. One page (8.5 x 11 in, front and back) of notes is permitted in the exams. The final exam will be conducted online. The final exam will **not** be a comprehensive test. It will only cover what we will study after the third midterm exam.

Academic Integrity:

Cheating (as defined in the SPC General Catalog) is not permitted. If you are caught cheating during an exam, you will be given a grade of **ZERO** for the exam and can result in an F for the course if circumstances warrant.

Missed Exams Policy:

There will be no make-ups for a missed exam unless a legitimate excuse for the date in question is provided. A make-up exam can be taken **no later than the end of the following class meeting**. If no legitimate excuse is given, a grade of zero will be given for that missed exam.

Attendance Policy:

It is vitally important that you plan your time to study the lecture notes on Blackboard and attend all the labs in order to do well in this course. Students who have never checked in on Blackboard and never attended labs by **September 9th** will be administratively dropped by the Office of Admissions and Records. More than **5** absences (labs and exams) over the semester can also lead to the dismissal from the class, and you will be given a final grade of **"X"**.

Dropping a Course:

Students may drop courses through Texan Connect, the Admissions and Records Office, or Advising and Testing Center through the late registration period. After late registration has closed, a student must complete the online [Student Initiated Drop Request](#) to drop a course. Students may also drop courses in person at any campus location by completing a Student Initiated Drop Form. Complete a [Student Initiated Drop Form](#) and return the signed form to the Levelland Admissions and Records Office, the Student Support Center at the Lubbock Downtown Center, the Lubbock Career and Technical Center, or Plainview Center. You must have a picture ID to complete the drop. A mark of **"W"** will be given for student-initiated drops that occur prior to and through the last day to drop as indicated in the online Academic Calendar found here: <https://www.southplainscollege.edu/academiccalendar/index.php>.

For information regarding official South Plains College statements about Artificial Intelligence, Intellectual Exchange, Disabilities, Non-Discrimination, Title IX Pregnancy Accommodations, CARE (Campus Assessment, Response, and Evaluation) Team, Campus Concealed Carry, and COVID-19, please visit <https://www.southplainscollege.edu/syllabusstatements/>.

Course Schedule

The schedule contains the dates for the lectures, exams, lab experiments and lab quizzes. All dates are subject to change. Changes will be announced by the instructor.

*The chapters are based on the 13th edition of the Timberlake textbook. **The textbook is optional. All of the lecture notes will be posted on Blackboard.**

*Some of the lab periods are used for worksheet practices to make sure that students understand the materials studied and to prepare students for the exams.

Week	LECTURE (Online, Blackboard)	LAB (Face to Face, Tuesdays)
Week 1 (Aug 24 – Aug 28)	Introduction and Chpt 2	Syllabus and Safety Rules
Week 2 (Aug 31 – Sept 4)	Chpt 2	Exp 2 and Exp 1
Week 3 (Sept 7 – Sept 11)	3.1, Chpt 4	Practice 1
Week 4 (Sept 14 – Sept 18)	Chpt 4	Exp 3 and Practice 2
Week 5 (Sept 21 – Sept 25)	Chpt 6	Midterm Exam 1 (September 22)
Week 6 (Sept 28 – Oct 2)	Chpt 6	Exp 5 and Practice 3
Week 7 (Oct 5 – Oct 9)	3.2, Chpt 7	Exp 16, Practice 4 and Exp 4
Week 8 (Oct 12 – Oct 16)	Chpt 7	Practice 5 and Practice 6 Review for Midterm Exam 2

Week 9 (Oct 19 – Oct 23)	Lab Quiz 1 online	Midterm Exam 2 (October 20)
Week 10 (Oct 26 – Oct 30)	Chpt 3, 7.9, Chpt 8	Exp 10 and Exp 7
Week 11 (Nov 2 – Nov 6)	Chpt 9	Exp 6 and Practice 7
Week 12 (Nov 9 – Nov 13)	Chpt 10	Exp 12 and Practice 8 (Exp 12 counts as 2 labs)
Week 13 (Nov 16 – Nov 20)	Chpt 11	Midterm Exam 3 (November 17)
Week 14 (Nov 23 – Nov 27)	Chpt 12 and 14 11.8	Building Organic Models (counts as 2 labs)
Week 15 (Nov 30 – Dec 4)	Biochemistry Lab Quiz 2 online	Practice 9 and 10
Week 16 (Dec 7 – Dec 11)	Final Exam online	No Lab, Do Not Come

Chapter Guide:

Chapter 2: Measurements, System of Units, Measured Numbers, Unit Conversions.

Chapter 4: Classification of Matter (3.1), Elements, Periodic Table, Atoms, Arrangement of Electrons in an Atom, Lewis Symbols for Representative Elements.

Chapter 6: Ionic Bonds, Formulas and Names of Ionic Compounds, Covalent Bonds, Formulas and Names of Molecular Compounds.

Chapter 7: Moles and Molar Mass, Chemical Reactions (3.2), Chemical Equations, Reaction Stoichiometry.

Chapter 3: Energy, Changes of State, Energy in Chemical Reactions (7.9).

Chapter 8: General Properties of Gases, Gas Laws.

Chapter 9: Solutions, Electrolytes and Nonelectrolytes, Solution Concentrations, Calculating Amount of Solute or Amount of Solution Using Molarity.

Chapter 10: Definitions of Acids and Bases, Reactions of Acids and Bases, Dissociation of Water, The pH Scale.

Chapter 11: Characteristics of Organic Compounds, Alkanes, Alkenes, Alkynes, Cis-Trans Isomers of Alkenes, Aromatic Compounds (11.8).

Chapter 12 and 14: Alcohols, Ethers, Aldehydes, Ketones, Carboxylic acids, Esters, Amines, Amides.

Biochemistry: Amino Acids and Proteins, Chiral Isomers, Carbohydrates, Lipids.