SUL ROSS STATE UNIVERSITY
Syllabus for General Chemistry II Laboratory
CHEM 1112: L01 (CRN:21620)
Spring 2026

General Chemistry II Lab
Section: L01
Room: WSB 307
Time: W 1:00-2:40 pm

TA: Hong Young Chang
Office: WSB 219
Email: hxc19tv@sulross.edu
Office Hours: After Lab

Required Laboratory Manual

The Laboratory Manual for CHEM 1112 is uploaded to Blackboard. Students need to download and print out the corresponding lab manual for each lab experiment before class.

Expectations and Safety

- Read over the experiment before the lab
- Follow all safety procedures:
- **Shorts, flip-flops, chewing gum, and open-toed shoes <u>ARE NOT</u>** allowed in the lab. If you come to class without appropriate clothing, you will be asked to leave. **<u>NO EXCEPTIONS!</u>**
- **Food and drink <u>ARE NOT</u>** allowed in the laboratory for your safety.
- **Safety glasses <u>ARE REQUIRED</u>** *for General Chemistry laboratories, which can be purchased from the SRSU Bookstore. You will NOT be allowed to participate in General Chemistry laboratories without safety glasses!* ***Note: Prescription glasses count as safety glasses.***

- A laboratory coat is also recommended for General Chemistry laboratories, which can be purchased from the SRSU Bookstore.
- If anyone is pregnant or gets pregnant during the semester, please inform your TA and Dr. Chang.
- **Calculator**: A scientific calculator is required for this course.
- **Cell phones <u>ARE NOT</u>** permitted for use in exams and should be turned off during laboratory time.

Attendance:

1. Coming to the lab is mandatory. Be on time and SIGN IN at the beginning of the lab period. Plan to spend the entire period in the lab. The TA may deduct points for students who arrive late or leave early. **If you miss 3 labs or more, you will receive an automatic F.**

2. If anyone is pregnant or gets pregnant during the semester, please inform your TA and Dr. Chang.

Assignments:

Lab Manual Assignments:

1. **Pre-Lab**: Due at the beginning of the lab, the experiment will be performed. (It must be done in Blackboard before the lab experiment. Its due time will be announced.)
2. **Post-Lab Questions**: Due during the lab period after the lab is done.
   (It also must be done in Blackboard after the Lab experiment.)

Written Assignments:

1. **Lab Report (Data Sheet)**: Due to the lab period after the lab is done

2. **Guidelines for writing lab reports** are shown on the next page and are found in your General Chemistry Laboratory Manual.

Lab Grading: Each experiment is worth 30 (or 35) points

- These points will come from:
  - The pre-lab (5) and Post-Lab Questions (5)
  - Attendance (10)
  - The experiment work & on time submission of data & the written lab report (10)
  - ***Note***: Points will be deducted for not turning in lab reports and data/results sheets on time.
- Assignments must be completed and turned in on time
  - Assignments must be legible
  - Assignments and reports will be due the following week unless told otherwise
  - 10% of the grade will be deducted for assignments not turned in at the beginning of the lab. An additional 10% will be deducted for each day when the assignment is late.

Scholastic Dishonesty: Students who violate the University rules on scholastic dishonesty are subject to penalties, including the possibility of an **F** in the course and/or dismissal from the University. **All assignments and lab reports (including**

Pre-Lab/Post-Lab Questions) need to be individually completed and not copied from another student's work.

Outline for Written Lab Reports:

- ***Aim***: Here you will state the goal of the experiment (in your own words).
- ***Reagents***: You will make a list of all the chemicals used in the experiment, along with relevant data (grams, volume, molarity, etc. that is indicated in your experiment.
- ***Apparatus***: You will list all the equipment that you will use.
- ***Method***: This is where you will outline the steps in the experiment. The steps will be put in your own words.
- ***Data & Results***: Note the observations that you made during the experiment. What are your findings? (Percent yield, melting point, *etc*.)
- ***Discussion***: Discuss your results and answer the questions that were asked in the **Data and Results** section of the experiment. Talk about the significance of your results. Were your results expected or unexpected? Why or why not?
- **Conclusion(s)**: Summarize the key points and findings of the experiment. Was the experiment successful or unsuccessful?

Objective:

Student Learning Objectives (SLO):

A student graduating with a ***chemistry major*** is expected to demonstrate that (s)he can do the following:

1. **Organic Chemistry**—Students will be able to draw organic molecular structures and explain organic reactions, stereochemistry, structural analysis, and reactions in biological systems.

2. **Inorganic Chemistry**—The student will be able to demonstrate an understanding of coordination chemistry, valence theory, elementary actions, and advanced molecular theory.

3. **Analytical Chemistry**—The student will be able to demonstrate an understanding of the theory of analytical chemistry and conduct analytical analysis, including data analysis and calibration, equilibrium chemistry, gravimetric analysis, titrimetric analysis, spectroscopic analysis, and electrochemical analysis.

4. **Physical Chemistry**—The student will be able to demonstrate an understanding of the application and theory of physical chemistry, including topics such as atomic structure, electrochemistry, surface chemistry, solid-state chemistry, and thermodynamics.

5. **Research**—The student will collect and analyze published chemical literature and undertake a chemistry research project.

Core Objectives (CO):

1. **Critical Thinking Skills** – Students will gain/improve their critical thinking ability by solving real-life chemistry problems through inquiry, analysis, and evaluation of

available information. Students will be tested on their critical thinking ability in exams and through lab experiments

2. **Communication Skills** – Students will have the opportunity to improve communication skills through oral discussion and writing reports (i.e., observation, explanation, and conclusion, etc.) on the experiments done in the lab sessions.

3. **Empirical and Quantitative Skills** – students will use the mathematical skills needed to manipulate and analyze numerical data obtained through experimentation to form conclusions.

4. **Teamwork** – students will use team spirit and consider different points of view to work effectively while conducting experiments as a team working toward a shared purpose or goal

***BSc in Chemistry Marketable Skills*:**

1. Students will become good at punctuality and time management.
2. Students will analyze &/or synthesize molecules and perform spectroscopic characterization and interpret their results scientifically.
3. Students will become proficient at writing scientific papers and identifying appropriate references for their paper.
4. Students will become proficient at orally presenting scientific topics, including the use of visual aids.

Learning Objectives and Outcomes of General Chemistry II Lab:

At the end of this course, a student should have a good understanding of:

1. According to the 1st law of thermodynamics, the heat generated by a chemical reaction in a system is released to its surroundings, or the heat required for a chemical reaction process is absorbed from its surroundings **(Exp. 2)**

2. Most chemical reactions involve the absorption or release of heat. At constant pressure, the heat change (δq) is equal to the enthalpy change (ΔH). The heat change is measured by a calorimeter. For a solution process, its enthalpy change (ΔH) is experimentally determined. **(Exp. 3)**

3. Based on 2D (dimensional) Lewis structures, 3D molecular structures are constructed by the VSEPR (Valence Shell Electron Pair Repulsion) theory. Their molecular shapes and molecular polarity are also predicted by 3D molecular structures. **(Exp. 4)**

4. Students learn how to construct the 3D models for simple organic molecules and how to classify different types of isomers of organic compounds from their projection and perspective formulae. **(Exp. 5)**

5. The presence of a solute affects the vapor pressure, boiling point, and freezing point of a solvent. These properties (colligative properties) of solutions depend on the number of solute particles. The boiling point elevation is proved by lab experiment. **(Exp. 6)**

6. The basic concepts of chemical kinetics: The reaction rate experiment is to quantify how fast a reaction occurs and to investigate how factors like temperature, concentration, catalyst presence, or surface area affect that speed. Students learn to measure reactant consumption or product formation over time to determine reaction rates and their dependencies. **(Exp. 7)**

7. After learning the concepts of acids and bases, students perform the acid-base titration. The purpose of this titration is to quantify the unknown concentration of an acidic or basic solution (analyte) by reacting it with a solution of known concentration (titrant) until neutralization. **(Exp. 8)**

8. The dissociation constant (K_a) for a weak acid (HA) represents its ionization. It is commonly determined through pH-metric titration with a strong base using the Henderson-Hasselbalch equation, where pH = pK_a. **(Exp. 9)**

9. The solubility product (K_{sp}) defines the equilibrium for a sparingly soluble salt, while the common ion effect describes how adding a soluble salt with a shared ion reduces the first salt's solubility, shifting the equilibrium to form more solid, as predicted by Le Chatelier's principle. **(Exp. 10)**

10. The basic concept of reduction & oxidation: students learn which element undergoes reduction or oxidation in a chemical REDOX, based on the change of the oxidation number for each element in the REDOX.

General Chemistry 1112 Lab Schedule

* This course calendar could be changed. In one week, your professor will let you know the changes.

Date	Experimental Topics
Jan.14	No Class
Jan.21	Syllabus Discussion, Safety Practices, and Procedures in the Laboratory **(Exp.1)**
Jan.28	Heat of Reaction **(Exp. 2)**
Feb.4	Enthalpy of Solutions **(Exp. 3)**
Feb.11	The VSEPR theory of Molecular Geometry **(Exp.4)**
Feb.18	Structure of Organic Chemicals and their Isomerism **(Exp.5)**
Feb.25	Colligative Properties **(Exp. 6)**
Mar.4	Rates of Chemical Reactions **(Exp. 7)**
Mar.11	No Class (Spring Break)
Mar.18	Acid-Base Titration **(Exp.8)**
Mar.25	Determination of Dissociation Constant of a Weak Acid **(Exp. 9)**
Apr.1	Solubility Product & Common Ion Effect **(Exp. 10)**
Apr.8	TBD
Apr.15	TBD & Lab Clean-Up
Apr.22	Online Final Exam

SRSU Disability Services: ADA (Americans with Disabilities Act): Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact Rebecca Greathouse Wren, LPC-S, SRSU's Accessibility Services Coordinator at 432-837-8203 (please leave a message and we'll get back to you as soon as we can during working hours), or email rebecca.wren@sulross.edu. Their office is located on the first floor of Ferguson Hall (Room 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832.

Libraries: The Bryan Wildenthal Memorial Library in Alpine offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu/. Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or by phone (432-837-8123). No matter where you are based, public libraries and many academic and special libraries welcome the general public into their spaces for study. SRSU TexShare Cardholders can access additional services and resources at various libraries across Texas. Learn more about the TexShare program by visiting library.sulross.edu/find-and-borrow/texshare/ or ask a librarian by emailing srsulibrary@sulross.edu.

New for Spring 2026: Mike Fernandez, SRSU Librarian, offers specialized library services to students, faculty, and staff. Utilize free services such as Interlibrary Loan (ILL) and Scant to get materials delivered to you at home or via email.

Academic Integrity: Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. Students should submit work that is their own and avoid the temptation to engage in behaviors that violate academic integrity, such as turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden. Students should also avoid using open AI sources ***unless permission is expressly given*** for an assignment or course. Violations of academic integrity can result in failing assignments, failing a class, and/or more serious university consequences. These behaviors also erode the value of college degrees and higher education overall.

Counselling: Sul Ross has partnered with TimelyCare where all SR students will have access to nine free counseling sessions. You can learn more about this 24/7/356 support by visiting Timelycare/SRSU. The SR Counseling and Accessibility Services office will continue to offer in-person counseling in Ferguson Hall room 112 (Alpine campus), and telehealth Zoom sessions for remote students and RGC students.

Classroom Climate of Respect: Importantly, this class will foster free expression, critical investigation, and an open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose, and

disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still, we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues.

Distance Education: Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires a secure login. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students on web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website. Directions for filing student complaints are located in the student handbook.