SUL ROSS STATE UNIVERSITY
Syllabus for General Chemistry I Lab: CHEM 1112: 2VL
CRN:31454
(Summer II 2026)

LAB: General Chemistry 1112
Lab Section: 2VL
Room: Online
Time: M, W, F
1:00-2:40 pm
Date: July 6 to August 12

TA: Dr. Hong Young Chang
Email: hxc19tv@sulross.edu
Office: WSB 219
Office Hours: After appointment via Zoom

Required Laboratory Manual

The Laboratory Manual for CHEM 1112 has been uploaded to Blackboard. Students need to download the corresponding lab manual (only Data & Results) for each lab experiment before class. You also need to fill out your answers in the Data & Results file during the lab class.

Expectations and Safety

- Read over the corresponding lab manual in the Blackboard (in the folder of Lab Manual, including instructions) before lab class.
- **Follow all safety procedures in case of a face-to-face lab class.**
- Shorts, flip-flops, **chewing gum, and open-toed shoes ARE NOT** allowed in the lab. If you come to class without appropriate clothing, you will be asked to leave. **NO EXCEPTIONS! In the face-to-face lab class.**
- **Food and drink ARE NOT** allowed in the laboratory for your safety in the face-to-face lab class.

- **In the case of a face-to-face lab class, 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, in the case of a face-to-face lab class, 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:

Coming to the lab is mandatory. Plan to spend the entire period in the lab. The TA or Dr. Chang may deduct points for students who arrive late or leave early. **If you miss 2 labs or more, you will receive an automatic F.**

Assignments:

- **Pre-Lab:** Due to the beginning of the lab class will be performed. (It must be done in Blackboard before the lab class.)
- **Data Sheet:** Download the corresponding lab manual from Blackboard. Due to the lab period, the lab is done. (Send it via email)

- **Post-Lab Questions:** Due to the lab period after the lab is done.
  (It also has to be done in Blackboard after the corresponding lab class)
- **Their due dates are assigned in the course calendar.**

Lab Grading:

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

- These points will come from:
  - Post-Lab Questions (10)
  - 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.
- Assignments must be completed and turned in on time (Their due date /time is announced in the course calendar.)

Scholastic Dishonesty:

Students who violate the University rules on scholastic dishonesty are subject to penalties, including an **F** in the course and/or dismissal from the University. **All assignments and lab reports (including Pre-Lab Questions and Post-Lab Questions) need to be individually completed and not copied from another student's work.**

Outline for Written Data & Results Sheet

(Use MS Word or a related program is strongly recommended.)

- Note the observations that you made during the experiment. What are your findings? (Percent yield, melting point, *etc*.)

Only the Data & Results sheet must be submitted via email during this summer semester. They must be submitted as a PDF file.

Learning Objectives and Outcomes of General Chemistry II Lecture and Lab:

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

1. The basic concepts and terms used in chemistry: Metric System, Mole, Matter, Energy in chemical process, application of the conservation of mass law, Chemical Formula, Ions and Molecules, etc.
2. The electronic structures of atoms and the periodic table trends
3. The basic concepts of chemical bonding (Covalent Bonding and ionic Bonding)
4. Chemical reactions in aqueous solutions; Evidence of chemical reactions, how to write chemical equations, and how to balance chemical equations.

5. The ideal gas equation; relations between volume, mass, and pressure

Student Learning Outcomes (SLO) by SACSCOC:

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.

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 identify 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. 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)**

3. 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)**

4. 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)**

5. 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)**

6. 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)**

7. 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)**

The SLOs as Core Curriculum Courses:

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. In addition, students will have opportunities for simple self-assessments on critical thinking.

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

addition, students will have opportunities for simple self-assessments on communication skills.

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 work toward a shared purpose or goal.

General Chemistry 1112 Lab Schedule and Brief Description (Course Calendar)

This is the course calendar. You need to focus on the date, experimental chapter number, topics, class type, and final examination day. This course calendar could be changed. In one week, your professor will let you know the changes. Pre-Lab Questions must be done before class. Due time for the Data & Results and the Post-Lab Questions is 11:59 PM on the corresponding day.

Date	Experimental Topics	Pre-Lab	Data Results	Post-Lab	Comment
6-Jul	No Class	x	x	x	
8-Jul	Syllabus Discussion, Safety Practices, and Procedures in the Laboratory **(Exp.1)**	x	x	x	The safety sheet has to be sent by email
10-Jul	Heat of Reaction **(Exp. 2)**	x	0 (July 13)	0 (July 13)	
13-Jul	The VSEPR theory of Molecular Geometry **(Exp.4)**	x	0 (July 15)	0 (July 15)	
15-Jul	Structure of Organic Chemicals and their Isomerism **(Exp.5)**	x	0 (July 17)	0 (July 17)	
17-Jul	Colligative Properties **(Exp. 6)**	x	0 (July 20)	0 (July 20)	
20-Jul	Rates of Chemical Reactions **(Exp. 7)**	x	0 (July 22)	0 (July 22)	
22-Jul	Acid-Base Titration **(Exp.8)**	x	0 (July 24)	0 (July 24)	
24-Jul	Determination of Dissociation Constant of a Weak Acid **(Exp. 9)**	x	0 (July 27)	0 (July 27)	
27-Jul	**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 Mrs. Mary Schwartze Grisham, LPC, SRSU's Accessibility Services Director at 432-837-8203 or email mschwartze@sulross.edu. Our office is located on the first floor of Ferguson Hall, room 112, and our mailing address is P.O. Box C122, 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 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.

News for Fall 2024: Mike Fernandez, SRSU Librarian, is based in Eagle Pass (Building D-129) to offer 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 based on 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 in the student handbook.