SUL ROSS STATE UNIVERSITY
Syllabus for General Chemistry II Laboratory
CHEM 1112: L01 (CRN:21342)
(Spring 2023)

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

TA: Kai Yun Lai
Office: WSB 219
Email: kxl20jj@sulross.edu
Office Hours: After Lab

Required Laboratory Manual

General Chemistry II: Laboratory Manual CHEM 1112 by Dr. Leaver, 2015 (available from the bookstore)

Objective:

Student Learning Objectives (SLO):
A student graduating with the ***chemistry major*** is expected to demonstrate that (s)he is able to 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 in order 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

Expectations and Safety

- Read over the experiment before lab
- Follow all safety procedures:
- Shorts, flip-flops, **chewing gum and open-toed shoes <u>ARE NOT</u>** allowed in

lab. If you come to class without appropriate clothing, you will be asked to leave. **NO EXCEPTIONS!**

- **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.*
- 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:

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 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.**

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

Assignments:

Lab Manual Assignments:

- Pre-Lab: Due at the beginning of the lab that the experiment will be performed.
- Data Sheet: Due the lab period after the lab is done.

Written Assignments:

- Pre-Lab Write Up: Due at the beginning of the lab that the experiment is performed
- Lab Report: Due the lab period after the lab is done
- Guidelines for writing lab reports are shown on the next page and are found in your General Chemistry 2 Laboratory Manual

Lab Grading:

- Each experiment is worth 30 points
- These points will come from:
    - The pre-lab definitions (5)
    - Attendance (5)
    - The experiment work & on time submission of data & result sheets/ written lab report (15)
    - ***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 lab. An additional 10% will be deducted for each day that the assignment is late

Outline for Written Pre-lab Reports

- ***Aim***: Here you will state the goal of the experiment (in your own words).
- ***Reagents***: You will make a list of all of 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 of 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.

Outline for Written Lab Reports (Use MS Word or related program)

- ***Aim***: Here you will state the goal of the experiment (in your own words).
- ***Reagents***: You will make a list of all of the chemicals used in the experiment along with relevant data (grams, volume, molarity etc.). This is how much ***YOU*** used, not how much the manual asks for.
- ***Apparatus***: You will list all of the equipment that you used.
- ***Method***: This is where you will outline the steps in the experiment. Be sure to note any difference between what you did and what the manual said to do.
- ***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?

SRSU Disability Services: ADA (Americans with Disabilities Act)

Sul Ross State University (SRSU) is committed to equal access in compliance with 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.

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) need to be individually completed and not copied from another student's work.**

General Chemistry 1112 Lab Schedule

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

Date	Experimental Topics
Jan.18	No Class
Jan.25	Syllabus Discussion, Safety Practices, and Procedures in the Laboratory (Exp.1)
Feb.1	Heat of Reaction (Exp. 2)
Feb.8	Enthalpy of Solutions (Exp. 3)
Feb.15	Lewis Structures and Molecular Shapes (Handout)(Dry Lab)
Feb.22	Structure of Organic Chemicals and their Isomerism (Hand out)(Dry Lab)
Mar.1	Synthesis of Aspirin (Handout)
Mar.8	Colligative Properties (Exp. 5)
Mar.15	No Class (Spring Break)
Mar.22	Rates of Chemical Reactions (Exp. 6)
Mar.29	Acid-Base Titration (Hand-out)
Apr.5	Determination of Dissociation Constant of a Weak Acid (Exp. 8)
Apr.12	Titration of Polyprotic Acids (Exp. 9) (Dry Lab)
Apr.19	Solubility Product & Common ion Effect (Exp. 10)
Apr.26	Lab Clean-Up / Online Test