

Sul Ross State University

Syllabus for General Chemistry II: CHEM 1112: (Fall 2018)

Lab: General Chemistry 1112

TA: Daniel Olive

Room: WSB 307

Office WSB 308

Time: 1:00-2:50 pm

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Office hours: TBA

Required Lab Manual

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

Objectives:

Student Learning Objectives (SLO);

A student graduating with the **chemistry major** expected to demonstrate that he/she 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: students will be able to demonstrate understanding of coordination chemistry, valence theory, elementary reactions and advanced molecular theory.
3. Analytical Chemistry: the student will be able to demonstrate an understanding of 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: students 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: Students will collect and analyze published chemical literature and undertake a chemistry research project.

Core Objectives (CO):

- A. 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
- B. Communication skills: students will have the ability to improve communication skills through oral discussion and writing reports (i.e. observation, explanation and conclusion) on experiments done in the lab sessions.
- C. 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
- D. 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.

Calculator: a scientific calculator is required for this course

Cell Phones are not permitted for use in exams and should be turned off during laboratory times

Expectations:

- Read over the Experiment before lab
- Follow all safety procedures
- Shorts, flip-flops, chewing gum and open toed shoes **are not** allowed in lab. If you come to class without appropriate clothing, you will be asked to leave. **No Exceptions**

Attendance:

Coming to lab is mandatory. Be on time and sign in at the beginning of the lab period. Plan to stay for the entire lab period. Points may be deducted for students who arrive late or leave early

If you miss 3 labs or more, you will receive an automatic F

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 experiments 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 II Laboratory Manual

Lab Grading:

Each experiment is worth 30 points; these points will come from:

- Pre-lab definitions (5)
- Attendance (5)
- The experiment work and on time submission of data/results sheet and written lab reports (20)
- Points will be deducted for late work
- Assignments must be legible and lab reports will be due the following week of the experiment unless told otherwise, 10% will be deducted each day 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 the chemicals used in the experiment along with any relevant data (grams, concentration etc.)
- **Apparatus:** here you will list all of the equipment you will use
- **Method:** this is where you will outline the steps in the experiment. These steps must be put in your own words

Outline for Written Lab Reports (use Microsoft Word or a related program)

- **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 any relevant data (grams, concentration etc. This is how much YOU used, not just what was stated in the lab manual)
- **Apparatus:** here you will list all of the equipment you used
- **Method:** this is where you will outline the steps in the experiment. These steps must be put in your own words. Be sure to note any difference between what you did and what the lab manual said to do.
- **Data and 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. Were the results of your experiment expected? Why or why not?
- **Conclusion (s):** summarize the key points and finding of the experiment. Was the experiment successful or unsuccessful?

Students with special needs: *Sul Ross State University is committed to equal access in compliance with Americans with disabilities act of 1973. It is the student's responsibility to initiate a request for accessibility services. Students seeking accessibility services must contact Mary Swartze in Counseling and Accessibility services, Ferguson Hall, Room 112. The Mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas 79832. Telephone: 432-837-8203. Email: mschartze@sulross.edu*

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*

General Chemistry 1112 Lab Schedule

<u>Week of</u>	Experiment
August 28	No Laboratory experiment
September 4	Safety Practices and Procedures in the Lab (Exp. 1)
September 11	Heat of Reaction (Exp. 2)
September 18	Enthalpy of Solutions (Exp. 3)
September 25	Polymers: a ticky- tacky plastic world (Exp 4)
October 2	Colligative Properties (Exp. 5)
October 9	Rates of Chemical Reactions (Exp. 6)
October 16	Acid- Base Titration (Exp. 7)
October 23	Determination of Disassociation Constant of a weak Acid (Exp. 8)
October 30	Titration of Polyprotic Acids (Exp. 9)
November 6	Solubility Product (Exp. 10)
November 13	qualitative analysis of cations (Exp. 11)
November 20	Qualitative analysis of Anions (Exp.12)
November 27	Lab Cleanup and Final