PRINCIPLES OF CHEMISTRY LAB (CHEM1051) Fall 2023

Lab Time and Location: M 9:30 - 11:30, **Room:** S235
Instructor: Gaumani Gyanwali – Ph. D.: OSU-Stillwater; MS, BS: Tribhuvan University
Office Location: S244
Office Hours: Posted on the office door
Contact Information: Office: (479)-394-7622, Ext. 1339
Cell: (479)-234-8727 E-mail: gyanwali@uarichmountain.edu

Prerequisite: A grade of 'C' or better in Elementary Algebra.

Required materials:

1. Laboratory Manual: Principles of Chemistry Lab Manual, Gaumani Gyanwali, UA Rich Mountain, 2016 (Revised: December 2018)
2. Lab safety goggles
3. Calculator capable of roots and exponents

Course Description: This is an introductory laboratory course in chemistry for 1 credit hour designed to meet the experimental needs of students in nursing, home economics, and other non-science majors. This course may not be taken separately without taking CHEM1053 (prior or currently).

Program Outcomes: Students will increase their
-writing, reading, speaking, and listening skills,
-competency in mathematics, utilizing their analytical and occupational skills to solve real life problems,
-understanding of different cultures and societies across the globe and how both have changed over time,
-understanding of basic principles and their application in the field of physical sciences and biological sciences, and
-technological and research skills.

Rationale: Through the study of chemistry, problem solving experiences, and laboratory activity, the student develops an understanding of mater and the laws that explain the interactions between matters, including the energy changes involved.

Course Objectives: Upon successful completion of CHEM1053 and CHEM1051 the students will increase their understanding and problem-solving skills in-
significant figures, accuracy and precision, scientific notations, density, temperature conversions, atomic structure, mass number and isotopes, ions and molecules, periodicity, chemical bonds, chemical reactions, gas properties and gas laws, molecular mass mole concept, solution properties and concentrations, acids and bases, pH and pOH, nuclear radiations, nuclear reactions.

Topical/Unit Outline and Tentative Schedule for Lab:

Date	Activities	Page	What is due
8/21	Lab 1 Measurement	4	Lab 1 pre-lab
8/28	Lab 2 Density	14	Lab 1 report, Lab 2 pre-lab
9/4	*Labor Day holiday, no lab*		
9/11	Lab 3 Specific Heat of Metals	24	Lab 2 report, Lab 3 pre-lab
9/18	Lab 4 Energy from Foods	34	Lab 3 report, Lab 4 pre-lab
9/25	Lab 5 Flame Tests for Salt Solutions	44	Lab 4 report, Lab 5 pre-lab

Date	Activities	Page	What is due
10/2	Lab 6 Ionic and Covalent Compounds	52	Lab 5 report, Lab 6 pre-lab
10/9	*Instructor at a conference, no lab*		
10/16	Lab 7 Chemical Reactions	60	Lab 6 report, Lab 7 pre-lab
10/25	Lab 8 Empirical Formula of Compounds	70	Lab 7 report, Lab 8 pre-lab
10/30	Lab 9 Charles's Law: Volume Temperature Relations	80	Lab 8 report, Lab 9 pre-lab
11/6	Lab 10 Titrations of Acids and Bases	88	Lab 9 report, Lab 10 prelab
11/13	Lab 11 Organic Compounds: Alkanes and Functional Groups	98	Lab 10 report, Lab 11 pre-lab
11/20	*Thanksgiving holiday, no lab*		
11/27	Make-up day – can make up one missed lab		Lab 11 report

Course Conduct: The lab will be performed once a week and a laboratory manual is provided as a guide to perform designated experiments within the laboratory period. The data must be collected properly following the guided principles of chemistry and scientific experimentation techniques mentioned in the manual. There are three steps to properly performing an experiment and completing a laboratory report.

1. Study the Introduction section in the lab manual for that experiment. Complete the Pre-laboratory Questions before coming to the lab.
2. Perform the experiment or several experiments in that chapter and fill up the data page as well as answer all the given questions.
3. Prepare a formal laboratory report following the guideline given at the end of the lab manual and following the format mentioned. Submit the completed lab report the next lab period (usually 1 week later).

UA Rich Mountain Credit Hour Calculator: For every course credit hour, you should expect to spend at least five clock hours per week of concentrated attention on course-related work, including but not limited to time studying the Introduction, completing the Pre-lab work, finishing the experiment and recording the data, preparing the lab report.

Course Requirements / Evaluation (Grading):

Your grade for this lab course comes from the following:

11 Lab reports @ 20 each	= 220
Total points possible	**= 220**

The final grade for the course will be determined by dividing the student's total number of points earned by the number of possible points. Grades are assigned using the following percentage scale, after rounding the calculated percentage to the nearest whole number:

90-100	**A**
80- 89	**B**
70- 79	**C**
60- 69	**D**
<60	**F**

Class Procedures/Student Requirements:

On-Campus Resources: A general guideline will be provided to how to perform experiments and how to prepare a laboratory report based on the experiments. You should follow the instructions clearly and completely to get the optimum benefit of not only understanding the objective of the experiments but also to get good grades.

Attendance: You must attend the lab and must complete the experiment yourself. Cannot copy other's data to prepare the lab report.

Assignment Due Dates: Lab reports will be due the next week of the lab period.

Make-up Work Policy**:** Make up work should be competed promptly after the absence when available. You must make up to be able to fill the data pages, use the Pre-lab for grades, and to prepare the lab report

Cell Phone Policy**:** Do not use your cell phone during the experiments. You can use it while doing calculations and writing data sheet.

Grading:

1. Pre-laboratory questions and the data pages including the questions: 10 points.
2. Laboratory Report: 10 points.

Academic Dishonesty: It is expected that each student shall do his/her own work on class works, quizzes, exams, and lab reports. Cheating, copying other's answers, writing other's statement without citing their reference are all considered plagiarism and are penalized from allowing no point in that particular unit up to dismissal from the whole course, depending on the severity of the offense.

Title IX and Discrimination Policy: UA Rich Mountain adheres to a policy that enables all individuals regardless of race, color, gender, national origin, age, religion, sexual orientation, veteran's status, or disability, to work and study in an environment unfettered by discriminatory behavior or acts. Harassment of an individual or group will not be condoned, and any person (student, faculty, of staff member) who violates this policy will be subject to disciplinary action.

Harassment that is considered discriminatory includes actions or conduct (verbal, graphic, gestural, or written) directed against any person or group with the intent to demean or create a hostile or threatening environment. It is not the intent of this policy to infringe upon or limit educational, scholarly, or artistic expression. Any person who believes he or she has been discriminated against should contact the Title IX Coordinator to obtain assistance and information concerning the filing of a complaint.

Face mask policy: Students are encouraged but not required to wear face masks in class and public spaces.

Attendance Policy: For attendance purposes, a student who is displaying symptoms of illness must email: contact.tracing@uarichmountain.edu to determine next steps for an excused absence related to COVID or flu. Contacting an instructor **DOES NOT** start this process or guarantee an excused absence.

Food and Drink: Food and drinks, except water in a closed container, are not allowed in the lab.

Disability Policy: It is the policy of UA Rich Mountain to accommodate students with disabilities, pursuant to state and federal law. Any student with a disability who needs accommodations should contact the Vice-Chancellor for Student Affairs Office, 394-7622, ext. 1400.

Arkansas Clean Air Act: In compliance with the Arkansas Clean Air Act, UA Rich Mountain is a smoke and tobacco free facility. Students and guests are to refrain from the use of all tobacco products while on campus.

Student Misconduct: Students committing misconduct are subject to disciplinary sanction(s) and/or restrictions. Misconduct or prohibited behavior includes, but is not limited to endangerment,

harassment, disruption, sexual misconduct, illegal drugs and/or alcohol, fire or safety issues, gambling, property violations, computer violations or other violations as listed in the UA Rich Mountain catalog.

UA Rich Mountain Mission: UA Rich Mountain provides transformative education to all learners.

Credit Hour Requirement Calculator				
Course Information				
Department, Course Number	CHEM1053(Lecture) and CHEM1051L(Lab)			
Course Title	Principles of Chemistry			
Credit Hours	3 + 1 = 4			
Mode of Delivery	Traditional			
Weeks in Part of Term	15			
Level of Reading Material	Advanced/Scientific/Technical (2)			2
Reading Level of Students	Average Student (2)			2
Average Pages per Hour	10			
Contact Hours		**Hours/Week**	**Hours/Term**	**Total Hours**
Lecture/Recitation			45	45
Lab Contact Hours			24	24
	Pages Asg'd	**Hours/Week**	**Hours/Term**	
Syllabus Items				
Reading	350			35
Assignment		1		15
Online Quiz		1		15
Researching Lab questions		2		30
Reviewing for exams			10	10
				0
				0
				0
				0
				0
Total Hours				174
Required Hours				150
Difference				Ok + 24