UNIVERSITY CHEMISTRY I CHEM1101L (Lab) Fall 2022

Lab Time and Location: W 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
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Prerequisite: Successful completion of 1½ units of high school algebra, OR a co-requisite MTH203 or Permission of Instructor

Required materials:

1. Laboratory manual: General Chemistry I Lab Manual, Gaumani Gyanwali (Revised 2019)
2. Lab safety goggles
3. Calculator capable of roots, exponents, and logarithms

Course Description: This is a basic chemistry laboratory course for 1 credit designed to meet the experimental needs of students planning to take advanced science majors such as Physics, Chemistry, Engineering, Forestry, Biology, Pharmacy, Medicines, etc. This laboratory course may not be taken separately without taking University Chemistry CHEM1103 prior or currently.

Program Outcomes: The knowledge and critical thinking skills acquired in the general education component enable students to analyze problems, to arrive at intelligent conclusions, and to make reasoned choices in their professional and personal lives.

- Use analytical and reasoning skills to solve practical problems based on structure-property relationship.
- Develop critical thinking and research skills based on basic laws of nature and chemistry.

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. The gained knowledge is applicable in upper level chemistry courses.

Course Objectives: Upon completion of University Chemistry I laboratory, the student should be able to:

1. Perform experiments designed to reinforce the concepts, derive conclusions, and prepare a lab report on measurements. Main topics include density calculation of liquids and solids, separation of mixtures, chromatographic techniques, prepare and apply standard acid base solutions, apply calorimetric principles, observe and analyze chemical reactions and calculate percentage yield, perform titrations, analyze the composition of salts.
2. Prepare formal laboratory reports on the experiments performed, draw proper conclusions, analyze scientific errors and present graphs or charts on the findings. (Components: collaboration, data collection, calculation and formulation, proper grammar and format, documentation, logical argument, hands-on skills)

Topical/Unit Outline and Tentative Schedule for Lab: University Chemistry I Lab Manual, Author: Gaumani Gyanwali

Date	Activities	Page	What is due
8/24 W	1. Density of solids, liquids, and solutions	5	Signed safety agreement Lab 1 Pre-lab page
8/31 W	2. Separation of three-component mixture	21	Lab 1 report, Lab 2 pre-lab
9/7 W	3. Chromatography	31	Lab 2 report, Lab 3 pre-lab
9/14 W	4. Composition of hydrates	41	Lab 3 report, Lab 4 pre-lab
9/21 W	5. Chemical reactions	53	Lab 4 report, Lab 5 pre-lab
9/28 W	6. Titration I: Preparation of standard solutions	65	Lab 5 report, Lab 6 pre-lab
10/5 W	Make up *(One missed lab from labs 1-6)*	-	*No lab, if not making up*
10/12 W	7. Titration II: Application of standard solutions	79	Lab 6 report, Lab 7 pre-lab
10/19 W	8. Molar mass of a volatile compound	93	Lab 7 report, Lab 8 pre-lab
10/26 W	9. Coffee cup calorimetry	101	Lab 8 report, Lab 9 pre-lab
11/2 W	10. Molecular model and structure	113	Lab 9 report, Lab 10 prelab Lab 10 worksheets
11/9 W	11. Chemical reactions and percentage yield	125	Lab 11 pre-lab
11/16 W	Make-up *(One missed lab from labs 7-11)*	-	Lab 11 report
11/23 W	*Thanksgiving holiday, no lab*	-	
11/30 W	Research Presentation (for lecture, starts 9:30 AM)		Prepared presentation slides

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 experiment.

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.

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.

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.

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	CHEM1103(Lecture) and CHEM1101(Lab)			
Course Title	University Chemistry I			
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	380			38
Assignment		1		15
Quiz		1		15
Researching Lab questions		2		30
Reviewing for exams			10	10
				0
				0
				0
				0
				0
Total Hours				177
Required Hours				150
Difference				Ok + 27