# University Chemistry I (CHM 1121L)
# Spring 2021

**Class Time and Location:** MTWRF 8:55-9:25; Mena High School room 314

**Instructor Name:** Mr. Rodney Rowland

**Office Location:** Mena High School room 312

**Office Hours:** 12:45-1:35 MTWRF

**Office Phone and Email**: 479-394-1144; rodney.rowland@menaschools.org

**Prerequisite:** Successful completion of 1 1/2 units of high school algebra, OR corequisite MTH203, or permission of instructor

**Resources:** Laboratory guide: Experimental Chemistry, Fourth Edition, by James F. Hall. Lexington: D. C. Heath and Company, 1999

**Face Mask Policy**: Per the executive order from the governor of Arkansas, all students are required to wear a face covering that completely covers the nose and mouth while on campus and in class. Masks with holes or masks that do not completely cover the nose and mouth are not acceptable.

**Food and Drink**: Food and drinks are not allowed in the lab at any time.

**Course Description:** This is a basic chemistry laboratory course (for one credit hour) designed to meet the experimental needs of students planning to take advanced science courses such as physics, chemistry, engineering, biology, etc. This laboratory course may not be taken separately without taking University Chemistry (CHEM 1103) 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. Students will also:

- 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 matter and the laws that explain the interactions between matters, including the energy changes involved.

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

1. Perform experiments designed to reinforce main concepts, derive conclusions, and prepare lab reports based on measurements. Main topics include calorimetry, molecular geometry, kinetics, equilibrium, acid-base theory, and electrochemical principles.

2. Prepare formal laboratory reports on the experiments performed, draw conclusions based on data/measurements, analyze scientific errors and present graphs or charts on the findings. Components of this include, collaboration, data collection, calculation and formulation, proper grammar and format, documentation, logical argument, and hands-on skills.

**Topical/Unit Outline and Tentative Lab Schedule:**

| Week | Experiments | |
|---|---|---|
| 2 | Hess's Law | |
| 3 | Thermodynamic Lab | |
| 4 | Open | |
| 5 | Molecular Geometry | |
| 6 | Open | |
| 7 | Order of Reaction with Crystal Violet | |
| 8 | Calculation of an Equilibrium Constant | |
| 9 | Open | |
| 10 | Application of LeChatlier's Principle | |
| 11 | Acid Content of Fruit Juice and Soft Drinks | |
| 12 | Open | |
| 13 | Buffering Capacity Lab | |
| 14 | Electrochemical Series | |
| 15 | Synthesis and Purification of Aspirin | |
| 16 | Open | |

During the semester, due to unforeseen circumstances, it may be necessary to add to or delete contents from this document. This will only be done with adequate notification to the students affected.

**Course Conduct:** Students will follow the following three steps when performing laboratory experiments and generating lab reports

1. Study the introduction section of the experiment literature. Complete pre-lab questions before the lab period.
2. Perform the experiment as outlined in the experiment literature or via student-generated procedures. Collect data and measurements.
3. Prepare a formal lab report using the guidelines given during the post-lab discussion. The formal lab report should be submitted three class days following the post-lab discussion.

**UA-Rich Mountain Credit Hour Calculator:** For every course credit hour, you should expect to spend at least three clock hours per week of concentrated attention on course-related work, including but not limited to time studying the introduction portion of the experiment literature, completing pre-lab questions, performing the experiment, recording data, and preparing the formal lab report. Please see the credit hour calculator information attached to end of syllabus.

**Course Requirements/Evaluation:** Lab reports will be used as your graded assignments for this course. Each formal lab report will be worth 25 points for a total 250 possible points (10 lab

reports x 25 points each). 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.

Final grades will be assigned on the basis of standard grading percentage scale:
90-100 **A**
80- 89 **B**
70- 79 **C**
60- 69 **D**
0- 59 **F**

**Class Procedures/Student Requirements:**

**Attendance Policy:** Regular attendance and punctuality are expected. It is the responsibility of the student to initiate arrangements for all missed activities. If an absence is a planned absence the student is expected to make arrangements for making up work prior to the absence. More than six absences will be considered excessive and, along with work not made up, may adversely affect the grade for the course. In case of extended illness, or other circumstances, the student must contact the instructor if a WP is desired. If the instructor is not notified a failing grade will be assigned for the course.

**Cell Phone Policy:** Students will follow the policy outlined in the MHS student handbook.

**Make-up work policy:** Make up work should be competed promptly after the absence. Students will adhere to the MHS student handbook for make-up work deadlines.

**Assignment due dates:** Students are expected to submit the assignments and other works on or before the assigned due dates. You will be penalized for the late works depending on the number of days. Lab reports will be due the third class day after completion of the lab exercise.

**Laboratory Procedures:** Students will sign and return a safety contract before beginning any activity in the laboratory. Students will wear goggles at all times and follow safety protocol set forth in the safety contract. Students who break the safety contract will be treated as stated in the student misconduct policy.

**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 federal law, state law. Any student with a disability who needs accommodations should contact the Associate Vice President for Student Affairs Office at 394-7622 ext. 1460.

**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 exists to provide all citizens of the Ouachita Mountain Region with exemplary educational and enrichment opportunities to improve the quality of life and standard of living.

# Credit Hour Requirement Calculator

**Instructor: Mr. Rowland**

**Course Information**

| | | |
|---|---|---|
| Department, Course Number | CHEM 1123 and CHEM 1121L | |
| Course Title | University Chemistry I and Lab | |
| Credit Hours | 4 | |
| Mode of Delivery | Traditional | |
| Weeks in Part of Term | 16 | |
| Level of Reading Material | Advanced/Scientific/Technical (2) | 2 |
| Reading Level of Students | Average Student (2) | 2 |
| Average Pages per Hour | 10 | |

*Enter either week or term, not both*

| **Contact Hours** | | **Hours/Week** | **Hours/Term** | **Total Hours** |
|---|---|---|---|---|
| Lecture/Lab | | | 80 | 80 |
| | **Pages Asg'd** | **Hours/Week** | **Hours/Term** | |
| **Syllabus Items** | | | | |
| Reading | 350 | | | 35 |
| Assignment | | 2 | | 18 |
| Researching Lab questions | | 1 | | 18 |
| Reviewing for exams | | | 15 | 15 |
| | | | | 0 |
| | | | | 0 |
| | | | | 0 |
| | | | | 0 |
| | | | | 0 |

| | |
|---|---|
| **Total Hours** | 166 |
| **Required Hours** | 150 |
| **Difference** | Ok + 16 |