PHYSICAL SCIENCE PHSC1001 (Lab) Fall 2022

Class Time and Location: T 9:30 – 9:20 AM, Room: **S235 and S229**
Instructor: Gaumani Gyanwali – Ph.D.: OSU-Stillwater; MS, BS: Tribhuvan University
Office Location: S244 (Mena Campus)
Office Hours: Posted on the office door
Contact Information: Office: (479)-394-7622, Ext. 1339
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Prerequisite: A grade of "C" or better in Elementary Algebra.

Resources:

Laboratory Manual: Physical Science Lab Manual, Gaumani Gyanwali, 2016, UA Rich Mountain (Revised: December 2019)

Required Materials:
1. Lab safety goggles
2. Calculator capable of roots and exponents
3. Laboratory manual mentioned above.

Course Description: This is a general education course designed to meet the need of a laboratory science course for education and other non-science majors. This introductory level course includes the laboratory experiments from the fields of chemistry, physics, and/or astronomy.

Program Outcomes: The purpose of the Associates of Arts Program is to provide the student with the knowledge and critical thinking skills that will enable them to analyze problems, arrive at intelligent conclusions, and make reasoned choices in his or her professional and personal life.

- Students will demonstrate an understanding of one-step mathematical calculations and applications.
- Students will demonstrate an understanding of physical and chemical principles.
- Students will apply technological and research skills to identify, locate, and process information.

Rationale: In this technological age and the age of science. It is imperative that people have a basic understanding of the scientific methods and technologies they are using in their daily lives. By using a conceptually based hands-on approach, students will quiet their fears of science and gain knowledge and appreciation for this omnipresent discipline.

Course Objectives: Upon successful completion of PHSC1001, the student should be able to

1. Carry out metric measurement of dimension, mass, volume, and temperature of regular and irregular solids, liquids, and compute volume and density based on those measurements.
2. Record motion data from motion sensors and gates to carry out computation and graphing of distance, velocity, acceleration and time to measure average speed and acceleration due to gravity
3. To set up heating plates and burners to carry out calorimetric measurements on metals, water, oil, and food samples.
4. To carry out measurement of speed of sound and touch tones frequencies.
5. To understand and distinguish the chemical properties and composition of chemical compounds, analyze the percentage composition, and ionic composition of salts.
6. Develop problem-solving skills for simple mathematical calculations of practical application.

(Components: collaboration, data collection, calculation and formulation, communication: proper grammar and style, documentation, logical argument, research skills)

Tentative Schedule for Lab:

Date	Activities	Page	What is due
8/23	Syllabus and Safety: Safety Agreement		Signed safety agreement
8/30	Lab 1 Measurement	5	Lab 1 pre-lab
9/6	Lab 2 Back and Forth Motion	19	Lab 1 report, Lab 2 pre-lab
9/13	Lab 3 Value of Acceleration due to Gravity	35	Lab 2 report, Lab 3 pre-lab
9/20	Lab 4 Specific Heat of Metals	43	Lab 3 report, Lab 4 pre-lab
9/27	Lab 5 Heating and Cooling Rates	53	Lab 4 report, Lab 5 pre-lab
10/4	Lab 6 Sound frequency and Speed	63	Lab 5 report, Lab 6 pre-lab
10/11	*Instructor at a conference, no lab*		
10/18	Lab 7 Caloric Values of Foods	73	Lab 6 report, Lab 7 pre-lab
10/25	Lab 8 Spectrometric Identification of Salt Solutions	83	Lab 7 report, Lab 8 pre-lab
11/1	Lab 9 Composition of a Metal Oxide	93	Lab 8 report, Lab 9 pre-lab
11/8	Lab 10 Types of Chemical Reactions	101	Lab 9 report, Lab 10 prelab
11/15	Lab 11 Composition of a Penny	111	Lab 10 report, Lab 11 pre-lab
11/22	*Thanksgiving holiday, no lab*		
11/29	Make-up day – can make up one missed lab		Lab 11 report

Course Conduct: Course Conduct: The lab will be performed once a week on Tuesdays 9:30-11:30 AM and a laboratory manual is provided as a guide to perform designated experiments. The data must be collected properly following the guided principles and scientific 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 three clock hours per week of concentrated attention on the course-related work. This is including but not limited to time attending class, as well as out-of-class time spent completing homework, seeking help from instructor or tutors, preparing for upcoming assignments/tests/exam, reviewing material, problem solving, and organizing your notebook. For a four-hour course, a typical student should expect to spend at least twelve hours per week. Please see credit hour calculator attached to end of syllabus.

Course Requirements/Evaluation (Grading):

Your grade for this 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 based on 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.

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	PHSC 1003 (Lecture) and PHSC1001 (Lab)			
Course Title	Physical Science			
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	360			36
Assignment		1		15
Online Quiz		1		15
Researching Lab questions		2		30
Reviewing for exams			10	10
				0
				0
				0
				0
				0
Total Hours				175
Required Hours				150
Difference				Ok + 25