MTH 2103

College Mathematics

Fall 2023

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Office Hours: MW 9:25 – 10:55, 12:55 – 4:25 (3:25 on W)

TR 11:55 – 1:55

F 10:00 – 12:00 by appointment

Class Time and Location: Tuesday and Thursday 8:00 – 9:15 am, Spencer 245

Prerequisite: Grade "C" or better in MTH013 or a minimum score of 39 on the ASSET Numerical Skills Placement Exam, 42 on the Compass Pre-Algebra Placement Exam, 26 on the Compass Algebra Placement Exam, 17 on the ACT Exam, 41 on the Accuplacer Elementary Algebra, or 470 on the SAT Exam.

Resources:

Textbook: Math in Our World, Fourth Edition, by Dave Sobecki. McGraw-Hill Company, 2019. *ISBN 978-1-260-38978-4*

Required Materials:

1. Miscellaneous pens, paper, and pencils.

Course Description

Comprehensive mathematics course designed for general education core and for degrees not requiring college algebra. A strong emphasis should be placed on critical thinking, mathematical modeling, and technology. The majority of the course must include topics from general concepts of functions. Projects, group work, reading, and writing should be included.

Expected Student Learning Outcomes

The overarching goal of Quantitative Literacy is to provide students with mathematical understandings and skills to be productive workers, discerning consumers, and informed citizens. Students will solve problems using mathematical reasoning involving logic, proportions, algebra, and relations. More specifically, **student performances** will include:

1. Identifying problem-solving strategies and applying them to contemporary everyday problems, both in work and in personal lives.
2. Analyzing reports from media to determine completeness and accuracy noting assumptions both stated and unstated.
3. Critiquing public consumer and political information for better understanding, completeness, and accuracy.

In keeping with the tenets of student performance in a general education course, Quantitative Literacy is designed to deliver instruction that focuses on process, conceptual understanding, communication and problem solving. Content will be delivered following the instructional principles below.

Instructional Practices for the Course

1. Content and its presentation will be based in the context of everyday life and selected for its usefulness to the students and their current and future needs for mathematical skills.
2. Assignments should include interpreting written materials containing quantitative information and communicating results in writing.
3. Basic mathematical processes should be integrated into student work so that essential understandings and skills are developed or reinforced throughout the course.
4. Problem solving strategies should be stressed, and students should engage in mathematical thinking to develop solutions to non-routine problems, sometimes struggling productively to encourage perseverance.
5. Students should have access to appropriate technology.

The mathematics content of Quantitative Literacy may vary from campus to campus. However, the four content strands below link with content from secondary schools as defined by the Common Core State Standards. It is recommended that any course taught under these guidelines should include at least three of the four areas of study. Because of the nature of the course, some campuses may find it necessary for Quantitative Literacy to meet not only the non-STEM general education requirement, but to add additional content to meet documented mathematical needs of students in subsequent courses in a non-STEM or STEM degree program.

The defined strands include:

- Personal, state, and national finance
- Statistics and probability
- Mathematical modeling
- Quantities and measurement

Course Description: Course content includes the fundamental processes of mathematics with emphasis on problem-solving techniques. Included is a review of arithmetic, introductory algebra, and rudiments of analytic geometry. A project of student's choice will be created to encompass class content with hands-on experience.

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. Many general education courses are designed to deal primarily with processes rather than simply with facts, to help students to develop individually and as members of a group and instill in students the desire to

develop intellectual and emotional skills through lifelong learning.

- Use computational mathematics to solve problems which they encounter at home and the workplace.
- Apply algebraic operations and their practical applications to problems.

Rationale: An objective of post-secondary education is to provide a core of knowledge that is shared with most educated people. By studying and developing a deeper understanding of mathematical computations, students can better analyze, problem solve and prepare critical thinking strategies for real world scenarios.

Proposed Schedule:

Start Date	Week		Topic
8/22	1-3		**Chapter 6: Topics in Algebra**
		6.1	Applications of Linear Equations
		6.2	Ratio, Proportion and Variation
		6.3	Rectangular Coordinate System and Linear equations in two variables.
		6.4	Functions
		6.5	Solving Quadratic Equations
9/12	4-6		**Chapter 7: Consumer Mathematics**
		7.1	Percent
		7.2	Personal Budgeting
		7.3	Simple Interest
		7.4	Compound Interest
		7.5	Installment Buying
		7.6	Student Loans and Home Buying
		7.7	Investing in Stocks and Bonds
10/3	7-8		**Chapter 8: Measurement**
		8.1	Measures of Lenth
		8.2	Measures of Area, Volume and Capacity
		8.3	Measures of Weight and Temperatures
10/17	9-11		**Chapter 10: Probability and Counting**
		10.1	Basic Concepts of Probability
		10.2	The Fundamental Counting Principle and Permutations
		10.3	Combinations
		10.4	Tree Diagrams, Tables and Sample Spaces

		10.5	Probability using Permutations and Combinations
		10.6	Odds and Expectations
		10.7	Addition Rules of Probability
		10.8	The Multiplication Rules and Conditional Probability
		10.9	The Binomial Distribution
11/7	12-15		**Chapter 11: Statistics**
		11.1	Gathering and Organizing Data
		11.2	Picturing Data
		11.3	Measures of Average
		11.4	Measures of Variation
		11.5	Measures of Position
		11.6	The Normal Distribution
		11.7	Applications of the Normal Distribution
		11.8	Correlation and Regression Analysis.

August 21	M	Classes begin
September 4	M	Labor Day holiday (no classes, campus closed)
October 2-6	M-F	Priority Registration for Spring
October 16	M	Mid-semester/first 8-week classes final grades due
November 22-24	M-F	Thanksgiving holidays begin (no classes, offices open W)
December 5	T	Classes end/Last day to drop a class with a W
December 6-12 December 14	W-T T	Final exams (16th week) Grades due

Methods of Instruction: The lecture approach, question and answer techniques, cooperative learning environments, calculator and computer usage, the overhead projector, and the smartboard are primarily the methods of instruction employed in this course.

Oral Reports: Occasionally a student may be asked to work a problem at the whiteboard and present an explanation to the class.

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 attending class, as well as out-of-class time spent reading, reviewing, organizing notes, preparing for upcoming quizzes/exams, problem solving, developing and completing homework, and other activities that enhance learning. For a three hour course, a typical student should expect to spend at least nine hours per week dedicated to the course. This includes the time spent in class.

Course Requirements / Evaluation (Grading):

Tests are 30% of your final grade. Three tests are scheduled.
Class Attendance & Participation 10%
Quizzes 10%
Homework Assignments 15%
Research & Presentations 15%
Final Exam 20%

The final exam is comprehensive and will include problems from the chapters we have covered in class.

90 – 100 = A **80 – 89 = B** **70 – 79 = C** **60 – 69 = D** **0 – 59 = F**

Criteria for Credit: Homework must be neat and complete all steps or an explanation of how to arrive at the correct answer must be given. ***Answers alone are not acceptable***. Write the lesson topic at the top of the first page. Leave at least one blank line between problems. All graphs are to be accurately sketched on graph paper with all parts properly labeled and all work for the problem shown on the same page as the graph. For immediate feedback, you may check your answers for most assigned problems in the back of the book. *You will not receive credit for any problems not meeting the criteria for credit described above.*

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.

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.

Make-up Policy: Make up work should be competed promptly after the absence. A maximum of one week will be the guideline. Make-up exams are given only in instances of the most unavoidable, serious circumstances, and most probably on a paper sheet. Prior notice of absence from an exam is required. Upon return after an absence the student is expected to be prepared for the days' class activities.

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 and full point and importance of the works assigned.

Computer and On-Campus Resources: Computer labs with printers are available in several places on campus including the Johnson Learning Commons. UA Rich Mountain offers students assistance with quality tutors available in the Student Support Services (SSS) and Learning Enrichment and Counseling Center (LEAC) in the Johnson Learning Commons. You may access www.tutor.com/uarichmountain at nights and weekends when SSS is not available.

Cell Phones: The use of cell phones in the classroom is prohibited. Turn cell phone off or set on vibrate and store it out of sight during class time. Cell phones will be taken up on test days.

Academic Dishonesty: Any suspicion of academic dishonesty will result in no credit for the paper in question. The use of ChatGPT or any other AI program to generate your work in any manner is strictly prohibited in this class and constitutes academic dishonesty. This action will be subject to the penalties of the academic dishonesty policy.

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. 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 provides transformative education to all learners.

Campus Security: UA Rich Mountain strives to provide a safe learning environment; therefore, students who know of any security risk are to contact a college official. For more information follow this link and look under the title Health and Safety: http://www.uarichmountain.edu/at-a-glance/disclosures

Credit Hour Requirement Calculator

Course Information				
Department, Course Number	Department of Math & Science			
Course Title	College Mathematics			MTH 2103
Credit Hours	3			
Mode of Delivery	Traditional			
Weeks in Part of Term	15			
Level of Reading Material	General/Easy/Non-Technical (1)			1
Reading Level of Students	Remedial Student or Slow Reader (3)			3
Average Pages per Hour	11			
		Enter either week or term, not both		
Contact Hours		**Hours/Week**	**Hours/Term**	**Total Hours**
CLASS CONTACT HOURS		3		45
	Pages Asg'd	**Hours/Week**	**Hours/Term**	
Syllabus Items				
Assigned Homework		4		60
GROUP ACTIVITIES		1		15
Lecture		2		30
				0
				0
				0
				0
				0
				0
				0
Total Hours				150
Required Hours				112.5
Difference				Ok + 37.5