MTH203-ME1
COLLEGE ALGEBRA
Fall 2019

Class Time and Location: M T W R F Room 107
Instructor: Bernice Philpot, B.S.E., M.S.E., Henderson State University EdS., U.A. Fayetteville
Office Location: Mena High School, room 107
Office Hours: 8:00 – 8:50 Mena High School, Room 107
Contact Information: Cell: (479) 216-4707
Email: Bernice.philpot@menaschools.org

Prerequisite: Minimum score of 19 on both the mathematics and Reading sections of the ACT or a grade of C or better in MTH033 (Intermediate Algebra) or a minimum score of 41 on the COMPASS Algebra Skills Place Exam. For High School credit only successful completion of Algebra 2.

Resources:

Text: *A Graphical Approach to College Algebra*, 4th Edition, John Hornsby, Margaret L. Lial, and Gary K. Rockswold, Addison Wesley, Pearson Education, Copyright 2007, ISBN # 0-321-35689-6

Required Materials:

1. Loose-leaf binder or spiral notebook with graph paper and college ruled paper
2. Pencils with good erasers (no ink)
3. TI 84 plus graphing calculator (See teacher if you need help.)

Course Description: The content of this course includes concepts linear and quadratic functions; transformations of basic curves, composition of functions; direct and inverse variations; solving and graphing problems whose mathematical models are polynomial, rational, exponential and logarithmic functions; solving systems of linear and nonlinear equations and inequalities with applications for each; determinants and matrices; linear programming; conic sections; binomial expansions; arithmetic and geometric sequences and series; and counting techniques and probability. (ACTS MATH1103)

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 computational mathematics, algebraic operations, and their practical applications to solve problems which they encounter at home and the workplace.
- Possess basic technological skills to identify, locate, and process information.

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. Technological skills with the graphing calculator are necessary for future math courses.

Course Objectives: Upon successful completion of MTH 203 College Algebra, the student should be able to:

1. Perform and solve basic function operations and algebraic problems using appropriate vocabulary and technology.
2. Use critical thinking to formulate decisions and problem solving based on reasoning and analysis.
3. Appropriately use technology to supplement and enhance conceptual understanding, visualization, and inquiry.
4. Synthesize information from a variety of sources to solve problems and interpret results.

5. Demonstrate understanding of functions including linear, absolute value, quadratic, polynomial, rational, logarithmic, and exponential.
6. Graph equations and inequalities by hand and on the graphing calculator.
7. Demonstrate an understanding of the applications of systems of equations and matrices.

Students will demonstrate mastery of the above objectives by grades of C or above on quizzes, tests, and exam.

Topical Course Outline:

Chapter 1: <u>Linear Functions, Equations, and Inequalities</u>
- 1.1 Real Numbers and Coordinate System
- 1.2 Introduction to Relations and Functions
- 1.3 Linear Functions
- 1.4 Equations of Lines and Linear Models
- 1.5 Linear Equations and Inequalities
- 1.6 Applications of Linear Functions

Chapter 2: <u>Analysis of Graphs of Functions</u>
- 2.1 Graphs of Basic Functions and Relations; Symmetry
- 2.2 Vertical and Horizontal Shifts of Graphs
- 2.3 Stretching, Shrinking, and Reflecting Graphs
- 2.4 Absolute Value Functions: Graphs, Equations, Inequalities, Applications
- 2.5 Piecewise – Defined Functions
- 2.6 Operations and Composition of Functions

Chapter 3: <u>Polynomial Functions</u>
- 3.1 Complex Numbers
- 3.2 Quadratic Functions and Graphs
- 3.3 Quadratic Equations and Inequalities
- 3.5 Higher Degree Polynomial Functions and Graphs
- 3.6 Topics in the Theory of Polynomial Functions (I)
- 3.7 Topics in the Theory of Polynomial Functions (II)
- 3.8 Polynomial Equations and Inequalities; Further Applications

Chapter 4: <u>Rational, Power, and Root Functions</u>
- 4.1 Rational Functions and Graphs
- 4.2 More on Graphs of Rational Functions
- 4.3 Rational Equations, Inequalities, Applications, and Models
- 4.4 Functions Defined by Powers and Roots
- 4.5 Equations and Inequalities Defined by Powers and Roots

Chapter 5: Inverse, Exponential, and Logarithmic Functions

- 5.1 Inverse Functions
- 5.2 Exponential Functions
- 5.3 Logarithms and Their Properties
- 5.5 Exponential and Logarithmic Equations and Inequalities
- 5.6 Further Applications and Modeling with Exponential and Logarithmic Functions

Chapter 7: Matrices and Systems of Equations and Inequalities

- 7.1 System of Equations
- 7.2 Solution of Linear Systems in Three Variables
- 7.3 Solution of Linear Systems by row transformations
- 7.4 Matrix Properties and Operations
- 7.5 Determinants and Cramer's Rule
- 7.6 Solution of Linear Systems by Matrix Inverses

Week #	**Proposed Schedule of Topics/Activities by book section #**	**Dates**
1	Discuss syllabus; Sections 1.1 – 1.2	
2	Sections 1.3 - 1.6	
3	Review & Test on Chapter 1; Section 2.1	
LABOR DAY HOLIDAY MONDAY !		
4	Sections 2.2 – 2.4	
5	Sections 2.5 – 2.6; Review of Chapter 2	
6	Test on Chapter 2; Sections 3.1 – 3.2	
7	Sections 3.3, 3.5, 3.6	
8	Sections 3.7 – 3.8; Review of Chapter 3	
9	Test on Chapter 3; Sections 4.1 – 4.2	
10	Sections 4.3 – 4.5	
11	Review & Test on Chapter 4:	
12	Section 5.1 -5.2	
13	Sections 5.3 – 5.5	
14	Section 5.6; Review & Test on Chapter 5	
THANKSGIVING HOLIDAY MONDAY -- FRIDAY !		
15	Sections 7.1 – 7.2	
16	Sections 7.3-7.5	
17	Sections 7.6 & Review	
18	Test on Chapter 7 Review for Final Exam	
18	Final Exam	

Course Conduct: The class will be taught using a combination of lecture, group interaction, question and answer approach, and independent study. New topics will be demonstrated using

the board, overhead (Elmo) projector, and TI 84+ Smartview computer program for support of graphing calculator use. Students are strongly encouraged to discuss concepts and examples as opportunities are presented during instructor presentation. It is the student's responsibility to inform the instructor when a concept is confusing or otherwise unclear.

UARM 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 completing homework, seeking help from instructor or tutors, preparing for upcoming quizzes/tests/exam, reviewing material, problem solving, and organizing your notebook. For a three hour course, a typical student should expect to spend at least nine hours per week dedicated to this course. This includes the time spent in class. Please see credit hour calculator attached to end of syllabus.

Course Requirements / Evaluation (Grading):

Tests and Quizzes are 50% of your quarter grade. Six chapter tests are scheduled. Quizzes may or may not be announced.

Homework are 50% of your quarter grade.
Criteria for Credit: Homework must be neat and complete. Each problem assigned has three parts: 1) the original problem complete with figures drawn, 2) all steps or an explanation of how to arrive at the correct answer, and 3) the final answer. ***Answers alone are not acceptable***. Use pencils and straight edge paper; no ink or ruffles please. Write the lesson topic at the top of the first page. Label each page with your name and lesson number in the top right hand corner. Leave a 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.*

An attendance bonus will be added to total homework points first then tests then test points before averaging.

Your final grade for this course comes from tests at the end of each chapter, homework , and a comprehensive final exam. On each of these, all work must be shown in neat form so that the teacher can grade it for partial credit even if you got the wrong answer. The final grade for the course will be determined by the sum of 3/7 of the 1st quarter grade, 3/7 of the 2nd quarter grade and 1/7 of the Final. Grades are assigned on the basis of the following percentage scale:

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

Class Procedures/Student Requirements:
UA Rich Mountain offers students assistance with quality tutors available in the Student Support Services and Learning Enrichment and Counseling Center in the Johnson Learning Commons.

Attendance / Make-up Policy: If a student is absent from any class, it is the student's responsibility to contact the teacher before the next class meets to determine if the absence is to be excused and if the student will be allowed to make up the missed work. There will be no make-up tests, quizzes, or exam given except in instances of the most unavoidable, serious circumstances. Approved make-ups will be taken before the class period following the absence unless other arrangements are made ahead of time with the teacher. Meanwhile, the student is responsible for instruction missed during that class by studying the material in the book, seeking help from tutors, and/or by getting class notes from another student.

Cell Phones**:** The use of cell phones in the classroom is prohibited. Turn cell phone off or on vibrate and store it out of sight during class time.

Academic Dishonesty: Any suspicion of academic dishonesty will result in no credit for the paper in question.

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, UARM 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 UARM catalog.

UARM Mission: University of Arkansas Rich Mountain exists to provide all residents of the Ouachita Mountain Region with exemplary educational and enrichment opportunities to improve the quality of life and standard of living.

Campus Security: UA Rich Mountain strives to provide a safe learning environment; therefore, students who know of any security risk are asked 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

This is a working document and the schedule is flexible and subject to change.

Department, Course Number	Mathematics	MTH203
Course Title	College Algebra	
Credit Hours	3	
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	11	

Enter either week or term, not both

Contact Hours	**Hours/Week**	**Hours/Term**	**Total Hours**
Lecture/Recitation		45	45

Syllabus Items	**Pages Asg'd**	**Hours/Week**	**Hours/Term**	
Weekly Homework Assignments		4		60
Prepare for Chapter Tests			12	12
Prepare for Final exam			4	4
Study Assigned Examples	87			7.9
				0
				0
				0
				0
				0
				0

Total Hours	128.9
Required Hours	112.5
Difference	Ok + 16.4