MTH-203

# College Algebra

University of Arkansas Rich Mountain

Fall 2021

**Class Time and Location:** **Asynchronous Online**
**Instructor Name:** **Carrie Barber**
**Instructor Email:** **cbarber@uarichmountain.edu**
**Office Hours:** **Virtual/Online By Appointment Only**
**Instructor Contact Number:** **501-420-2282**

**Prerequisite:** Minimum score of 22 on both the mathematics and English sections of the ACT or a grade of C or better in MTH033 (Intermediate Algebra) or a minimum score of 77 on the Accuplacer Algebra Skills Placement Exam

**Resources:**

Textbook: *A Graphical Approach to College Algebra*, 6th Edition, John Hornsby, Margaret L. Lial, and Gary K. Rockswold, Pearson Education, Copyright 2015, ISBN-10: 0-321-92030-9

**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, with minimum of 70% accuracy on daily work, quizzes, unit exams, and the final exam, 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.

**Course Conduct:** This course is conducted through brief on-line lectures and/or videos, as well as homework assignments. You cannot pass the course without doing the homework. You are encouraged to form study groups to complete your homework. You may seek assistance from Student Support to **check** homework assignments. It is not the responsibility of Student Support to re-teach the entire lesson to complete your homework. If you are having extreme difficulty, please make an appointment with me to discuss it. Please expect a minimum of nine hours of work per week on this class.

**UARM Credit Hour Calculator:** Success in this course requires concentrated practice through homework assignments and online practice while utilizing the graphing calculator as well as concentrated preparation for all exams. 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:**

- There will be 23 Homework Assignments worth 5 points each, dropping 5 so only 18 counting for a total credit of 90 possible points.
- There will be 10 Quizzes assigned worth 15 points each, dropping the lowest 2 so only 8 count for a total credit of 120 possible points.
- There will be 4 Unit/Module Exams worth 60 points each for a total of 240 possible points. The final exam score can replace the lowest exam if it is a higher score.
- There will be one Final Exam worth 150 total points. The percentage score of the final exam can be used to replace the actual score of the lowest Unit/Module Exam if it is higher.

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|---|---|
| Homework – 15% | Homework – 90 points |
| Quizzes – 20% | Quizzes – 120 points |
| Unit/Module Exams – 40 % | Unit/Module Exams – 240 point |
| Final Exam – 25% | Final Exam – 150 points |
| Total – 100% | Total Points – 600 points |

**Grading scale:**

| | |
|---|---|
| A = 90%-100% | A = 540 – 600 |
| B = 80%-89% | B = 480 – 539 |
| C = 70%-79% | C = 420 – 479 |
| D = 60%-69% | D = 360 – 419 |
| F = 0%-59% | F = 0 – 359 |

**Class Procedures/Student Requirements:** Students are expected to complete all assignments and submit their work. If a student is having difficulties, they may contact the instructor for assistance or refer to the Student Support for some additional help. All assignments are due by 11:59 pm the night of the given due dates. Students experiencing connectivity or submission issues should contact the instructor detailing the issues that are occurring before the submission time has expired for the given assignment.

**Make-Up/Late Work Policy:** All assignments are due by 11:59 pm the night of the posted due dates. If there is an issue with connectivity, an email MUST be sent to the instructor with specific details of the issue BEFORE the time for the assignment in question expires.

**Attendance Policy:** It is the student's responsibility to immediately contact the instructor if they will not be present for class.

**Academic Dishonesty**: Any student found to have committed any misconduct, including academic misconduct/dishonesty, is subject to face disciplinary sanction(s) within the academic due process as well as within the behavioral process. If a student is found to have committed academic dishonesty, the result will be receiving no credit for the assignment in question.

**Disability Policy:** It is the policy of UARM 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, or 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.

**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, dishonesty, illegal drugs and/or alcohol, fire or safety issues, gambling, property violations, computer violations or other violations as listed in detail in the UARM catalog.

**Face Mask Policy:** As per the direction of the University of Arkansas Board of Trustees, all students are required to wear a proper 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 nose and mouth are not acceptable. Any student that does not have a proper mask will leave class and be referred to the Vice Chancellor for Student Affairs for possible disciplinary action.

**Food and Drink:** Because this is an asynchronous/online course, it is up to the individual school district/building as to whether food and drinks, including water are allowed in the classroom at any time.

**UA Rich Mountain Mission:** The University of Arkansas Rich Mountain provides transformative education to all learners.

**Topical Outline/Course Schedule:**

| Week | Date | Sections/Topics |
|---|---|---|
| 1 | 8/25/21 | Syllabus & Calendar |
| | 8/27/21 | 1.1 - Real Numbers & The Rectangular Coordinate System<br>1.2 - Introduction to Relations & Functions |
| 2 | 8/31/21 | 1.3 - Linear Functions<br>1.4 - Equations of Lines & Linear Models |
| | 9/2/21 | 1.5 - Linear Equations & Inequalities |
| 3 | 9/7/21 | 1.6 - Application of Linear Functions |
| | **9/9/21** | **Exam 1** |
| 4 | 9/14/21 | 2.1 - Graphs of Basic Functions & Relations; Symmetry |
| | 9/16/21 | 2.2 - Vertical & Horizontal Shifts of Graphs |
| 5 | 9/21/21 | 2.3 - Stretching, Shrinking, & Reflecting Graphs |
| | 9/23/21 | 2.4 - Absolute Value Functions |
| 6 | 9/28/21 | 2.5 - Piecewise-Defined Functions |
| | 9/30/21 | 2.6 - Operations & Composition |
| 7 | **10/5/21** | **Exam 2** |
| | 10/7/21 | 3.1 - Complex Numbers |
| 8 | 10/12/21 | 3.2 - Quadratic Functions & Graphs |
| | 10/14/21 | 3.3 - Quadratic Equations & Inequalities |
| 9 | 10/19/21 | 3.4 - Applications of Quadratic Functions & Models |
| | 10/21/21 | 4.1 - Rational Functions & Graphs |
| 10 | 10/26/21 | 4.2 - Rational Functions & Graphs |
| | 10/28/21 | 4.3 - Rational Equations, Inequalities, Models, & Applications |
| 11 | 11/2/21 | 4.4 - Functions Defined by Powers & Roots |
| | **11/4/21** | **Exam 3** |
| 12 | 11/9/21 | 5.1 - Inverse Functions |
| | 11/11/21 | 5.2 - Exponential Functions |
| 13 | 11/16/21 | 5.3 - Logarithms & Their Properties |
| | 11/18/21 | 5.4 - Logarithmic Functions<br>5.5 - Exponential & Logarithmic Equations & Inequalities |
| 14 | 11/23/21 | 6.1 - Systems of Equations |
| | 11/25/21 | Thanksgiving |
| 15 | **11/30/21** | **Exam 4** |
| | 12/2/21 | Final Exam Review |
| 16 | **12/6-12/9** | **Final Exams** |

*This calendar will be adjusted to the needs of the course. Changes will be based on progress throughout the course.