MATH0012-01
**SUPPLEMENTARY MATH**
Spring 2021

**Class Time and Location:** MW 2:00 – 2:50, Room S-245

**Instructor**: Marsha Jenkins – B.S.E., Henderson State University
**Office Location:** Johnson Learning Commons 205
**Office Hours:** MW 8:30 – 12:30, 1:00 – 2:00, 3:00 – 5:00
TR 8:30 – 12:30, 1:30 – 5:30
F 8:00 – 2:15
**Office Phone:** (479) 394-7622 ext. 1623
**Cell phone:** (870) 584-92178
**email:** mjenkins@uarichmountain.edu

**Co-requisite**: MTH 203 (College Algebra) with a score of 17 or 18 on the mathematics section of the ACT (or equivalent score on COMPASS or Accuplacer).

**Resources**:

Textbook: No additional textbook required. Use College Algebra Book . . . *A Graphical Approach to College Algebra*, 6th Edition, John Hornsby, Margaret L. Lial, and Gary K. Rockswold, Addison Wesley, Pearson Education, Copyright 2007, ISBN # 0-321-92030-9

Required Materials:

1. Loose-leaf binder or spiral notebook.
2. Pencils with good erasers or erasable ink pens
3. Printed copies of College Algebra handouts, including notetaking guides and practice tests.
4. TI 84 plus graphing calculator (May rent from bookstore or purchase. May borrow one from the instructor for use during class time only.)
5. Straight Edge, graph paper, or graph stamp are optional.

**Course Description**: The two credit hours are given for documentation of a minimum of two hours per week spent receiving tutoring from a qualified tutor (SSS professional tutor or math instructor or college designee). The goal of this course is to increase student success in College Algebra. The content of this course includes the concepts of 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.

**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. This course provides means by which students will accomplish the following outcomes:

- 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 MATH0012 Supplementary Math and MTH 203 College Algebra, the student should, with a minimum of 70% accuracy on daily work, tests, and the final exam in MTH 203, 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.

**Topical Course Outline:** Since this course is supplemental to College Algebra, the timeline for Supplementary Math will correlate with the timeline for College Algebra as follows:

Chapter 1: Linear Functions, Equations, and Inequalities — Weeks 1 – 2 — 01/11 – 01/22

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: Analysis of Graphs of Functions — Weeks 3 – 4 — 01/25 – 02/05

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: Polynomial Functions — Weeks 5 – 7 — 02/08 – 02/26

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
Review for **College Algebra Test 1**

Chapter 4: Rational, Power, and Root Functions Weeks 8 – 9 03/01 – 03/12
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 Weeks 10 – 11 03/15 – 04/02
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
Review for **College Algebra Test 2**

Chapters 6: Systems and Matrices Week 12 04/05 – 04/09
6.1-6.2 Systems of Equations in two and three variables
6.5 Matrices (Determinants & Cramer's Rule)

Chapter 7-8: Analytic Geometry & Further Topics Weeks 13-14 04/12 – 04/23
7.1 Circles and Parabolas
8.1-8.3 Sequence and Series
Review for **College Algebra Test 3**

Comprehensive Review Week 15 04/26 – 04/30

**Important dates:**

| | |
|---|---|
| February 8 (M) | Four Week grades due UA Rich Mountain |
| February 15 (M) | Winter Break (No classes/offices open) |
| March 8 (M) | Eight Week (Mid-term) grades due UA Rich Mountain |
| March 22 – 26 | Spring Break (No classes/offices open) |
| April 12 (M) | Twelve Week grades due UA Rich Mountain |
| April 30 (F) | Last day of classes/Last day to drop with a W |
| May 3 - 6 (M-Th) | Final Exams |
| May 6 (Th) | Grades due UA Rich Mountain |

**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. Because this is a course supplementary to College Algebra, there is no assigned work outside of the classroom for this two-hour course. However, for College Algebra, a typical student should expect to spend at least nine hours per week dedicated to the three-hour course. This includes the time spent in this class. Please see credit hour calculator attached to end of syllabus.

**Course Requirements / Evaluation (Grading):**

Your grade for this course comes from actively participating by taking notes, solving problems, verbally participating in class (5 points per day with points deducted for not actively participating) and attendance (5 points per day with points deducted for tardiness). All work must be shown in neat form so that the teacher can evaluate it and assist the student in correctly completing it, as needed. Because grades are solely based on attendance and participation, the student needs to contact the instructor and schedule a time to make-up excused absences within one week of the absence. At the discretion of the instructor, extended time may be given for extenuating circumstances such as an extended, disabling illness. The final grade for this 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:

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

**Class Procedures/Student Requirements**:

**<u>COVID-19 Protocols:</u>** For your protection, and the protection of others, please adhere to the following COVID-19 protocols until further notice.

**Face Mask Policy:** As per the Executive Order from the governor of Arkansas, 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:** Food and drinks, including water are not allowed in the classroom at any time. This eliminates the need to remove masks and potentially expose others.

**Attendance:** Daily attendance is mandatory, either in-class or through Zoom. In the event a student is quarantined, the student will automatically shift to an all-Zoom attendance format for the 14-day period. Students are to notify their instructors of any quarantine orders, and a doctor's note is required. In the event the instructor is

quarantined, the entire class will shift to an all-Zoom/online format for the 14-day period. Students will be notified accordingly. Any potential absence is to be shared with the instructor.

**Technology Concerns:** Students with access concerns are expected to communicate with their instructors. Additionally, students can access the wi-fi from the South parking lot near the Ouachita Center. Students with access issues are encouraged to access course Zoom sessions from the parking lot, if needed. Students would be expected to drive to campus under normal classroom conditions. While it is not ideal, it does ensure reliable access and regular course participation. Students may use personal cell phones/devices to attend Zoom sessions. However, students have the option to check out campus computers from the library (Johnson Learning Commons).

**Social Distancing:** Students are to follow the social distancing guidelines as outlined by the Arkansas Department of Health (ADE) and the Centers for Disease Control (CDC). Additionally, UARM staff have clearly marked hallways, arranged classroom furniture, and removed keyboards from workstations to adhere to such guidelines. Students are asked not to assemble in the hallway before class. Please come to class when your class is schedule to start. When leaving the classroom, students will be asked to exit in an orderly manner to allow 6 feet between each person.

**Seating arrangements:** Students are not to sit at workstations where keyboards have been removed. Furthermore, due to contact-tracing regulations required by the ADE and CDC, students are to sit in the **same** seat/location **each** time they come to class.

**Cleaning procedures:** Students are expected to assist in keeping the classroom clean. Students are to clean their workstations each day upon entry and before leaving. Disinfecting wipes will be provided. Students are expected to wear gloves when using computers and keyboards, as these objects are more difficult to clean without damaging them. Gloves will be provided. To prevent cross-contamination, students are to remove and dispose of gloves upon leaving the classroom.

**Computer and On-Campus Resources:** Your student portal/College Algebra Moodle contains resources/documents for each chapter studied, including assignments, examples, and review problems. You must open and print these documents, as made available by the College Algebra instructor, and bring them to class with you. Computer labs with printers are available in several places on campus including the Johnson Learning Commons. UARM 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.

**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 class time at a time determined by the instructor and the student. There will be no make-up 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. If you are expecting a critical phone call, discuss the situation with the instructor prior to class. When the call arrives, leave the classroom to take the call. Otherwise, points will be deducted from your grade for use of/having your cell phone visible during class. This includes texting/communicating via a smartwatch.

**Academic Dishonesty**: Any suspicion of academic dishonesty will result in no credit for the paper 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 President 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:** Th University of Arkansas Rich Mountain provides transformative education to all learners.

## Credit Hour Requirement Calculator

| **Course Information** | | | |
|---|---|---|---|
| Department, Course Number | Mathematics | MATH0012 | |
| Course Title | Supplementary Math | | |
| Credit Hours | 2 | | |
| 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/Class Participation | | | 30 | 30 |
| | **Pages Asg'd** | **Hours/Week** | **Hours/Term** | |
| **Syllabus Items** | | | | |
| Weekly Homework Assignments | | 0 | | 0 |
| Prepare for Chapter tests | | | 0 | 0 |

| | | |
|---|---|---|
| Prepare for Final Exam | 0 | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| | | 0 |
| **Total Hours** | | 30 |
| **Required Hours** | | 30 |
| **Difference** | | Ok |