MississippiValleyStateUniversity
Fall 2022

College: Arts & Sciences

Department: Department of Mathematics, Computer & Information Sciences

Course Number: MA 111

Course Name: College Algebra

Instructor: Lee A. Redmond

Class Meetings: MWF 9:00 -9:50; TR 9:25 – 10:40

Office Location: CRB 136

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CRB Office Hours:
MWF: 10:00 - 11:00 am ; 1:00 -2:00 pm
TR: 2:30 pm - 4:00 pm
M: 2:00 pm - 3:00 pm

Virtual Office Hours:
MWF: 10:00 - 11:00 am

Course Description:
Exponents and radicals, polynomials, factoring, functions and graphs, linear and quadratic equations, inequalities, systems of equations.

Course Credit
3 hours

Prerequisites
It is preferred that students would have completed several courses in advance mathematics in high school and have a subtest score of 20 or above on the mathematics portion of the ACT. Otherwise MA 100B is a prerequisite for this course.

Purpose/Rationale
This course will serve as a tool to provide the necessary background in algebra for students who need additional preparation for the study of higher mathematics and related courses in fields such as the sciences, business and education. Students are expected to read extensively from the textbook and spend a considerable amount of time solving problems to help understand the concepts. This course will allow students the opportunity to use mathematics more effectively as a problem- solving tool in their personal and professional lives. A combination of exercises and activities will be included to help all students acquire certain skills that must be embedded in every potential holistic transformer. Topics will be taken from chapters throughout rather than chapter by chapter coverage.

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Course Objectives And Goals

The objectives and goals of this course are:

1. To provide students with adequate exposure and subject matter to prepare them for a more in-debt study of upper level mathematics courses.
2. To help students develop their critical thinking, technological andmathematical writing skills.
3. To help students develop a step-by-step procedure for solving problems.
4. To prepare students to communicate mathematically both orally and in writing.

Course Content:

Text (REQUIRED)

Sisson, R. (2008). **College Algebra. 3nded.** Charleston, SC: Hawkes Learning Systems/Quant Systems, Inc.

Major Areas of Study:

1. Number Systems and Fundamental Concepts of Algebra
1.8 The Complex Number System

2. Equations and inequalities in one variable
2.1 Linear equations in one variable
   a. Equivalent equations and the meaning of solutions
   b. Solving linear equations
   c. Solving absolute value equations
   d. Solving linear equations for one variable
   e. Interlude: Distance and Interest Problems
2.2 Linear Inequalities in one variable
   a. Solving linear inequalities
   b. Solving compound linear inequalities
   c. Solving absolute value inequalities
2.3 Quadratic Equations in one variable
   a. Solving quadratic equation by factoring
   b. Solving "perfect square" quadratic equations
   c. Solving quadratic equation by completing the square
   d. The quadratic formula
2.4 Polynomial and Polynomial-Like Equations in one variable
   a. Solving quadratic-like equations
   b. Solving general polynomial equations by factoring
   c. Solving polynomial-like equations by factoring
2.5 Rational Equations in one variable
   Solving rational equations

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2.6 Radical equations
- a. Solving radical equations
- b. Solving equations with positive rational exponents

3. Equations and Inequalities in two variables
3.1 The Cartesian coordinate system
- a. The components of the Cartesian coordinate system
- b. The graph of an equation
- c. The distance and midpoint formulas
3.2 Introduction to Circles
- a. Standard form of a circle
- b. Graphing circles

3.3 Linear equations in two variables
- a. Recognizing linear equations in two variables
- b. Intercepts of the coordinate axes
- c. Horizontal and vertical lines
3.4 Slopes and forms of linear equations
- a. The slope of a line
- b. Slope-intercept form of a line
- c. Point-slope form of a line
3.5 Parallel and perpendicular lines
- a. Slopes of parallel lines
- b. Slopes of perpendicular lines

4. Relations, functions, and their graphs
4.1 Relations and functions
- a. Relations, domain, and ranges
- b. Functions and the vertical line test
- c. Functional notation and function evaluation
- d. Implied domain of a function
4.2 Linear and Quadratic functions
- a. Linear functions and their graphs
- b. Quadratic functions and their graph
5. Working with Functions
5.3 Combining Functions
- a. Combining functions arithmetically
- b. Composing functions
5.4 Inverse Functions
- a. Inverses of relations
- b. Finding inverse function formulas

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6. Polynomial and Rational Functions
6.2 Polynomial division and the division algorithm
a.   Polynomial long division and synthetic division
6.3 Locating Real Zeros of Polynomials
       a.   The Rational Zero Theorem

9.1 Solving systems by substitution and elimination
       a.   Definition and classification of linear systems of equations
       b.   Solving systems by substitution
       c.   Solving systems by elimination

Student Learning Outcomes
After successfully completing the course, the student will be able to do the following:
- Express relationships using the concept of a function and use verbal, numerical, Graphical and symbolic means to analyze a function.
- Model situations from a variety of settings by using polynomial, exponential and logarithmic functions.
- Manipulate mathematical information, concepts, and thoughts in verbal, numeric, graphical and symbolic form while solving a variety of problems which involve polynomial, exponential or logarithmic functions.
- Apply a variety of problem-solving strategies, including verbal, algebraic, numerical, And graphical techniques, to solve multiple-step problems involving polynomial, exponential ,logarithmic equations and inequalities and systems of linear equations.
- Shift among the verbal, numeric, graphical and symbolic modes in order to analyze functions.
- Use appropriate technology in the evaluation, analysis and synthesis of information in problem-solving situations.

Teaching Methods
The method used to accomplish the goals and objectives of this course include a combination of lectures, demonstrations, class discussions, use of technology and group activities.

Technology Infusion
The text is accompanied by a *cd* that serves as supplementary material to the text. This *cd* also contributes to completion of homework, quizzes, and exams given by the instructor. Also, the students may use calculators in this course. (**No sharing of calculators allowed/No cell phones may serve as calculators)**. Students are also encouraged to use the internet to explore other activities on a given concept.

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Major Student Activities
(Including attendance policy, make-up policy, etc…)
Class Requirements:

- Every student must have a textbook and must bring it to class daily.
- An organized notebook consisting of all the students' work should be neatly kept.
- The notebook (binder or folder) should contain lecture notes and all homework assignments properly labeled. See instructor for more details.
- Students are expected to attend class, take notes, and carefully complete all homework assignments and submit at the **beginning of class**. Incomplete or late assignments will not be accepted unless prior preparations have been made with instructor. No make-up work or assignments will be given.
- Students are strongly encouraged to participate in all class activities with both the instructor and other students.
- Students are expected to pass written examinations based on classroom lectures, Lab and homework assignments. Failure to make up an exam will result in a grade of zero. For any student who could not take the test, a **make-up** test must be taken at the time designated by the instructor. Notification of not being able to take the test must come **before** the test is given. This test is usually given before the next meeting date if possible.
- Random quizzes and notebook checks will be given. These activities **cannot** be made up.

Evaluation Criteria
The evaluation methods, with exception to the midterm and final exam, may vary with instructors.
(See Final Exam below)

Grading Scale

Score (Average)	Grade
90-100	A
80-89	B
70-79	C
60-69	D
Below 60	F

Content Exams and Special Assignments…………………………………..…60%

Daily Average……………………………………………………………….…30%
        (Quizzes, Homework, and Lab Assignments)

Final Exam………………………………….…………………………………..10%

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Final Exam
The final exam is a comprehensive examination consisting of all topics covered. The final exam is common to all MA 111 courses. **The location and time for the final exam will be given at** a later date. Students *should not* bring personal items (backpacks, cell phones, etc…) to the testing area. However, students should bring two (2) pencils and a calculator (optional) to the exam site. A minimum may be required on the final exam to exit the course.

Attendance Policy
It is necessary for students to attend every class meeting and lab sessions. Any student who misses more than the allowed number **(3)** of absences will be subject to a decrease in their final grade.

<u>ADA/STUDENTS WITH SPECIAL NEEDS</u>

Mississippi Valley State University is committed to providing reasonable accommodations for students with a documented disability. If you feel you are eligible to receive accommodations for a covered disability (medical, physical, psychiatric, learning, vision, hearing, etc.) and would like to request it for this course, you must be registered with the Services for Students with Disabilities (SSD) program administered by University College. It is recommended that you visit the Disabilities Office located in the Social Science Building Office 105 to register for the program at the beginning of each semester. For more information or to schedule an appointment, please contact Mrs. Kathy Brownlow, via phone or email at 662-254-3443 or kbrownlow@mvsu.edu

Cheating, Plagiarism/Academic Integrity and Penalties:
Cheating is a serious offense and will not be tolerated. You are expected to complete your own work for any assignment/test that will be submitted for a grade. I do encourage you to seek assistance from others when needed. Any student found cheating on homework or any other class activity will be subject to disciplinary action. Penalties for academic dishonesty might include the assignment of an "F" for the assignment and possible as a course grade and/or other administrative penalties consistent with the policies of the university. Copying work from Mathway, Photomath or similar applications falls under this category.

Incomplete
Only students with acceptable excuses who could not complete the course requirements within the semester will be considered for a grade on incomplete. The student must have a passing grade of C or better up to withdrawal date. Otherwise, students should drop or withdraw from the class. Requests for a grade of I should be done in writing for students who are eligible.

Notes:
Students should always **show their work** to receive credit for test or homework problems. Answers alone **will not** be accepted.

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Cell phones should not be used at any time during the class period. It is preferred that cell phones not be visible. If you must use them, step outside the classroom. **They cannot be used as calculators on tests!!!!!!!**

It is the student's responsibility to check with the instructor and other students before the next class meeting to find out what happened on days when they were out of class. Being excused **does not** mean you are not responsible for any assignments submitted that day.

Date	*Content*
Week 1	Fundamental Concepts
Week 2	The Complex Number System – 1.8
Week 3	2.1 – 2.2
Week 4	2.3 a, b
Week 5	2.3c, d
Week 6	2.4a - c
Week 7	2.5
Week 8	2.6a,b
Week 9	3.1, 3.3
Week 10	3.4 – 3.5
Week 11	3.2
Week 12	4.1 -4.2
Week 13	5.3 – 5.4
Week 14	9.1
Week 15	Final Exam

Note: The dates and/or topics are subject to change.

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