Midland College
Syllabus
2008-09
MATH 1414
College Algebra
3 Semester Credit Hours
(3 Lecture/0 Lab)

Course Description: This course is designed to enable students to become proficient in the following algebraic topics: polynomials, rational expressions, exponents, radicals, linear equations and inequalities, quadratic equations, exponential and logarithmic equations, systems of equations, and binomial expansion. Prerequisite: Requires a C or greater in Math 0391 and a pass in the co-requisite Math 0190 in same semester, or a satisfactory score on an algebra placement test, or at least 270 on the THEA. Course Fee.


The text and My Math Lab access code are available at the college bookstore.

Course Goals/Objectives: After successfully completing this course the students should be able to:

1. Use the language of algebra.
2. Work problems about relations and functions, polynomials, rational expressions, exponents, radicals, quadratics, and complex numbers.
3. Solve and graph linear equations and inequalities.
4. Solve quadratic equations.
5. Solve systems of equations.
7. Create mathematical models.

Student Contributions and Class Policies: Students are expected to attend class regularly; they may be dropped if they have more than six absences in a MWF class, or more than four absences in a TT class. Students are expected to behave in a manner that will not interfere with the learning process.

Midland College does not tolerate scholastic dishonesty or academic misconduct in any form. Please read the MC Student Handbook on this subject.
Evaluation of Students:

Students will be evaluated based, as follows:

- 60 - 80% exams
- 10 - 30% final exam
- 0 - 20% homework, quizzes, or projects as determined by the individual instructors.

Grade ranges are:

- 90-100 for an A,
- 89 for a B,
- 79 for a C,
- 69 for a D, and
- 0- 59 for an F.

The normal grading scale is in accordance with the Midland College Faculty Handbook. Any grade ranges that differ from these should be noted in the individual instructor’s grade book.

Course Schedule:

Equations and Inequalities
1.1 Linear Equations
1.2 Quadratic Equations
1.3 Complex Numbers; Quadratic Equations in the Complex Number System
1.4 Radical Equations; Equations Quadratic in Form; Factorable Equations
1.5 Solving Inequalities
1.6 Equations and Inequalities Involving Absolute Value
1.7 Problem Solving: Interest, Mixture, Uniform Motion, Constant Rate Job Applications

Graphs
2.1 The Distance and Midpoint Formulas
2.2 Graphs of Equations in Two Variables; Intercepts; Symmetry
2.3 Lines
2.4 Circles
1.5 Variation

Functions and Their Graphs
3.1 Functions
3.2 The Graph of a Function
3.3 Properties of Functions
3.4 Library of Functions; Piecewise-defined Functions
3.5 Graphing Techniques: Transformations
3.6 Mathematical Models: Building Functions
Linear and Quadratic Functions
4.1 Linear Functions and Their Properties
4.2 Building Linear Functions from Data
4.3 Quadratic Functions and Their Properties
4.4 Quadratic Models; Building Quadratic Functions from Data
4.5 Inequalities Involving Quadratic Functions

Polynomial and Rational Functions
5.1 Polynomial Functions and Models
5.2 Properties of Rational Functions
5.3 The Graph of a Rational Function
5.4 Polynomial and Rational Inequalities
5.5 The Real Zeros of a Polynomial Function
5.6 Complex Zeros; Fundamental Theorem of Algebra

Exponential and Logarithmic Functions
6.1 Composite Functions
6.2 One-to-One Functions; Inverse Functions
6.3 Exponential Functions
6.4 Logarithmic Functions
6.5 Properties of Logarithms
6.6 Logarithmic and Exponential Equations
6.7 Compound Interest
6.8 Exponential Growth and Decay Models; Newton’s Law; Logistic Growth and Decay Models
6.9 Building Exponential, Logarithmic, and Logistic Models from Data

Systems of Equations and Inequalities
8.1 Systems of Linear Equations: Substitution and Elimination

Intellectual Competencies:
1. Reading - Understanding the material incorporated in the text used in this course will require the student to analyze and interpret various mathematical concepts.

2. Listening - The primary teaching methods used in this course are discussion and lecture. Understanding the oral presentation of material will require the student to analyze and interpret various mathematical concepts.

3. Critical Thinking - Critical thinking, as exemplified by problem solving, is inherent in the study of any scientific discipline. Mathematical problems will be considered, discussed, and analyzed in this course.
### ADA Statement:

Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible. These conditions may include documented physical or educational disabilities. Please be aware that services or accommodations are not automatic. Each student must request them and secure the proper authorizations.

### Exemplary Objectives:

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Competencies:

1. To apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.

2. To represent and evaluate basic mathematical information verbally, numerically, graphically and symbolically.

3. To expand mathematical reasoning skills and formal logic to develop convincing mathematical arguments.

4. To use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.

5. To interpret mathematical models such as formulas, graphs, tables and schematics and draw inferences from them.

6. To develop the view that mathematics is an evolving discipline, interrelated with human culture, and understanding its connections to the other disciplines.