Midland College  
Syllabus  
2008-09  
MATH 2412  
Pre-Calculus  
4 Semester Credit Hours  
(4 Lecture/0 Lab)

Course Description: This course is designed to enable students to become proficient in applications of algebra and trigonometry to the study of elementary functions and their graphs including polynomial, rational, exponential, logarithmic, and trigonometric functions. Some topics from analytical geometry are discussed.


A graphing calculator will be used.

Course Goals/Objectives: After successful completion of this course students should be able to graph and be familiar with the applications of basic functions including: polynomial, rational, exponential, logarithmic, and trigonometric. Students should also be familiar with graphing conics and polar and parametric equations.

Student Contributions and Class Policies: Students are expected to regularly attend class; they may be dropped if they have more than six absences in a three-day a week class, more than four absences in a two-day a week class, or six total class hours. Students will act in an appropriate manner that will not interfere with the learning situation of other students as determined by the instructor.

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.

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.

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 and then 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.

Class schedule:

**Chapter 1: Graphs and Functions**
1.1 Real Numbers and Their Properties
1.2 Linear and Absolute Value Inequalities
1.3 Equations and Graphs in Two Variables
1.4 Linear Equations in Two Variables
1.5 Functions
1.6 Graphs of Relations and Functions
1.7 Families of Functions, Transformations, and Symmetry
1.8 Operations with Functions
1.9 Inverse Functions

**Chapter 2: Polynomial and Rational Functions**
2.1 Quadratic Functions and Inequalities
2.2 Complex Numbers
2.3 Zeros of Polynomial Functions
2.4 The Theory of Equations
2.5 Miscellaneous Equations
2.6 Graphs of Polynomial Functions
2.7 Rational Functions and Inequalities

**Chapter 3: Trigonometric Functions**
3.1 Angles and Their Measurements
3.2 The Sine and Cosine Functions
3.3 The Graphs of the Sine and Cosine Functions
3.4 The Other Trigonometric Functions and Their Graphs
3.5 The Inverse Trigonometric Functions
3.6 Right Triangle Trigonometry
3.7 Identities
3.8 Conditional Trigonometric Equations
3.9 The Law of Sines and the Law of Cosines

**Chapter 4: Exponential and Logarithmic Functions**
4.1 Exponential Functions and Their Applications
4.2 Logarithmic Functions and Their Applications
4.3 Rules of Logarithms
4.4 More Equations and Applications
Chapter 5: Conic Sections, Polar Coordinates, and Parametric Equations

5.1 The Parabola
5.2 The Ellipse and the Circle
5.3 The Hyperbola
5.4 Polar Equations
5.5 Polar Equations of the Conics
5.6 Parametric Equations

Additional Sections on Vectors

Vectors
The Dot Product
The Cross Product

Instructor:

Name:
Office:
Phone:
E-mail:
Hours:

Division Dean: Dr. Margaret Wade, 125 SF, 685-4615
Division Secretary: Norma Duran, 124 SF, 685-4612
Brenda Smith, 124 SF, 685-6413