

# Missouri State University

## Department of Mathematics

### Course Syllabus

**TITLE OF THE COURSE: Pre-Calculus Mathematics**

**NUMBER OF THE COURSE: MTH 138**

#### **COURSE DESCRIPTION**

Prerequisites: "C" grade or better in MTH 102 or MTH 103, or an approved score on the departmental placement test. Selected topics in algebra and trigonometry to prepare the student for calculus. A student who takes MTH 135 and MTH 138 receives credit toward graduation only for one of the courses. Will not count toward mathematics major or minor. A grade of "C" or better is required in this course in order to take MTH 261, MTH 287, CSC 125 or CSC 131. This course may not be taken pass/not pass.

#### **PHILOSOPHY OF THE COURSE**

The course is designed to provide students with a mastery understanding of the mathematical properties of various types of functions (polynomial, exponential, logarithmic, and trigonometric) and sequences, and to immerse students with rich experience of real world applications.

#### **PURPOSE OF THE COURSE**

To provide students with mathematical skills and concepts necessary for the study of calculus.

#### **OUTCOMES OF THE COURSE**

1. The ability to develop and demonstrate problem-solving strategies.
2. The ability to recognize patterns.
3. The ability to solve equations and inequalities involving algebraic and trigonometric functions.
4. Working knowledge of advanced theorems of algebra, including: the binomial theorem, the Fundamental Theorem of Algebra, and DeMoivre's theorem.
5. Ability to use the concepts of algebra and trigonometry to solve practical physical problems.
6. Ability to read, understand and communicate mathematical ideas verbally and in writing.
7. Perceive mathematics as active, engaging, and dynamic.
8. Approach mathematics through a focus on gathering information, making conjectures, testing conjectures, justifying ideas through an organized mathematical argument.
9. The use of technology as an aid in building concepts and solving problems with emphasis on graphing and the interpretation of graphs.

#### **OUTLINE OF THE COURSE**

Equations and inequalities (2 days), functions and graphs (11 days), polynomial and rational functions (8 days), conic sections (3 days), exponential and logarithmic functions (8 days), trigonometric functions (11 days), analytic trigonometry (10 days), applications of trigonometry (5 days), sequence and series (4 days), mathematical induction, binomial theorem (3 days), Review (5 days), Tests (5 days).