MATHEMATICS 110

PRE-CALCULUS

I. Introduction

    A. Catalog Description

    This course presents the basic concepts of algebra and trigonometry needed for future courses in mathematics, science, business, or the behavioral and social sciences. It includes a review of elementary algebra, introduction to algebraic functions, exponential and logarithmic functions, and trigonometric functions. Students who have received credit for MATH 111 may not receive credit for MATH 110. *Prerequisite: Three years of high school mathematics.* Does **not** satisfy the Mathematical Approaches core requirement.

    B. Objectives

    The objective of Pre-calculus is to provide the student with the basic concepts of algebra and trigonometry and the mathematical maturity needed for further courses in mathematics, science, business or the behavioral and social sciences. Students will learn to use technology appropriate for problem solving using elementary functions.

    C. Prerequisites

    Three years of high school mathematics.

    Mathematics 111 does <u>not</u> satisfy the mathematical reasoning requirement within the University's core curriculum.

II. Required Topics

    A. Review of elementary algebra

        1. Complex number system

        2. Properties of real numbers

        3. Addition, subtraction, multiplication, factoring of polynomials

        4. Rational expressions and rational exponents

        5. Linear, absolute value, quadratic, and radical equations

        6. Linear, absolute value, quadratic, inequalities

        7. Coordinate geometry and graphing techniques

    B. Introduction to functions

        1. Linear and quadratic functions

        2. Graphs and transformations

        3. Inverses

    C. Exponential and logarithmic functions and equations

D.  Trigonometric functions

    1.  Definitions, properties, and graphs

    2.  Analytic trigonometry

- Identities

- Formulas

- Equations

    3.  Trigonometry:  measuring triangles

- Right triangle trigonometry and applications

- Laws of sines and cosines

III.  Optional Topics

Analytic geometry:  the conic sections

IV.  Bibliography

Swokowski, Earl W. and Jeffery A. Cole, <u>Algebra and Trigonometry with Analytical Geometry</u> , Brooks/Cole Publishing Company

Hungerford, Thomas W., <u>Contemporary Precalculus</u>, Saunders College Publishing

Larson, Roland E., Robert P. Hostetler, Bruce H. Edwards,  <u>Precalculus Functions and Graphs</u>, Houghton Mifflin Company