

Math 2412 PreCalculus Course Document

Credit Hours

Four semester hours

Transferability

This course should transfer to all four year colleges and degree programs. If you are concerned about the transferability of this course you should contact the counseling center or the college / university to which you will transfer.

Prerequisites

Math 1314 and Math 1316 or Instructor / Departmental Approval

Course Description

An integrated treatment of the concepts necessary for calculus, emphasizing elementary functions and their graphs including polynomial, rational, exponential, logarithmic and trigonometric functions. Also includes topics from analytic geometry. The student may elect to include a technology lab component at some colleges.

Materials

Required Textbook and Scientific Calculator (Graphing Calculator Recommended)

Learning Outcomes

- Set up and solve optimization problems.
- Apply the binomial theorem.
- Prove statements using mathematical induction.
- Graph conic sections including rotation and translation and identification of vertices, foci and asymptotes.
- Determine equations of conics given defining parameters.
- Perform operations and graph equations using polar and parametric equations.
- Use properties of arithmetic and geometric sequences and series to identify terms, find sums and solve applications.
- Perform basic operations and solve applications using vector algebra.
- Use properties of matrices and determinants to solve linear systems and applications

Textbook Sections

Precalculus
by Cohen, 6th Edition
Thomson Learning
ISBN 0-534-40212-7

4.4 - Applied Functions: Setting Up Equations

4.5 - Maximum and Minimum Problems

6.1 - Trigonometric Functions of Acute Angles (review)

9.1 - Laws of Sines and Cosines (review)

9.2 - Vectors in the Plane (review)

9.3 - Vectors in the Plane - Algebraic Approach

9.4 - Parametric Equations

9.5 - Introduction to Polar Coordinates

9.6 - Curves in Polar Coordinates

10.3 - Matrices

10.4 - The Inverse of a Square Matrix

10.5 - Determinants and Cramer's Rule

11.1 - The Basic Equations

11.2 - The Parabola

11.4 - The Ellipse

11.5 - The Hyperbola

11.8 - Rotation of Axes

12.2 - Division of Polynomials

12.3 - Remainder and Factor Theorems

12.4 - Fundamental Theorem of Algebra

12.5 - Rational and Irrational Roots

12.6 - Conjugate Roots and DesCartes' Rule of Signs

12.7 - Introduction to Partial Fractions

12.8 - More about Partial Fractions

13.1 - Mathematical Induction

13.2 - The Binomial Theorem

13.3 - Introduction to Sequences and Series

13.4 - Arithmetic Sequences and Series

13.5 - Geometric Sequences and Series