

Course Outline for MATH 1006, College Algebra

MATH 1006 College Algebra (3 units)

Prerequisite: Appropriate Math Placement.

Precalculus algebra without trigonometry. Factoring, exponents, and radicals. Real and complex numbers. Modeling with equations and inequalities. Rational, exponential, and logarithmic functions. Matrices, determinants, and systems of linear equations. MATH 1006 covers the same material as MATH 1004, but meets 3 hours a week. 3 lectures. Fulfills GE Area 2 with a grade of C- or better. Formerly MATH 118.

Course Learning Objectives	
1	Use the language and notation of functions.
2	Describe polynomial, rational, exponential, and logarithmic functions and their properties using the proper language and notation.
3	Graph and interpret functions using algebraic principles.
4	Solve linear and quadratic equations and inequalities.
5	Perform operations with real and complex numbers.
6	Perform the basic operations with matrices and determinants.
7	Construct models to solve problems.
8	Solve systems of two or three linear equations using matrices and determinants.

Expanded Course Content

Textbooks, materials, and/or other resources
"Precalculus: Mathematics for Calculus", 7th Edition, by James Stewart, Lothar Redlin and Saleem Watson, Cengage Learning

Week	Readings	Topics of Discussion
1	Sections 1.1 - 1.3 of Stewart	Real numbers, exponents and radicals, algebraic expressions
2	Sections 1.4 - 1.6 of Stewart	Rational expressions, equations, complex numbers
3	Sections 1.7 - 1.8 of Stewart	Modeling with equations, inequalities

Week	Readings	Topics of Discussion
4	Sections 1.9 - 1.11 of Stewart	The coordinate plane, graphs of equations, circles, lines, solving equations and inequalities graphically
5	Sections 2.1 - 2.3 of Stewart	Functions, graphs of functions, getting information from the graph of a function
6	Sections 2.4 - 2.5 of Stewart	Average rate of change of a function, linear functions as models
7	Sections 2.6 - 2.8 of Stewart	Transformations of functions, combining functions, one to one functions and their inverses
8	Sections 3.1 - 3.2 of Stewart	Quadratic functions and models, polynomial functions and their graphs
9	Sections 3.3 - 3.5 of Stewart	Dividing polynomials, real zeros of polynomials, complex zeros and the Fundamental Theorem of Algebra
10	Sections 3.6 - 3.7 of Stewart	Rational functions, polynomial and rational inequalities
11	Sections 4.1 - 4.3 of Stewart	Exponential functions, the natural exponential function, logarithmic functions
12	Sections 4.4 - 4.5 of Stewart	Laws of logarithms, exponential and logarithmic equations
13	Sections 4.6, 10.1, 10.2 of Stewart	Modeling with exponential functions, systems of linear equations
14	Sections 10.3 - 10.5 of Stewart	Matrices and systems of linear equations, the algebra of matrices, inverses of matrices and matrix equations
15	Sections 10.6, 10.9 of Stewart	Determinants and Cramer's rule, systems of inequalities

Method of Assessment

The possible methods of assessment are written individual examinations, quizzes, in-class worksheets or presentations, projects, and homework. All exams are to be proctored in-person, and one or more midterms and a cumulative final exam are required.

Instructional Mode

The instructional mode for this class is face-to-face. This designation means that the essential academic standards of the course require in-class student engagement, and thus remote instruction is not appropriate.