



<b>Division:</b>	Science/Mathematics	<b>Area:</b>	Mathematics
<b>Course Number:</b>	MATH 164	<b>Course Name:</b>	Precalculus
<b>Prerequisite:</b>	MATH 151 or two years high school algebra and one year high school geometry		
<b>Corequisite:</b>	NONE		
<b>Hours Required:</b>	<b>Class:</b> 64	<b>Lab:</b> 0	<b>Credits:</b> 4 (four)

## Course Description/Purpose

This course emphasizes the study of polynomial, exponential, logarithmic and trigonometric functions. Other topics considered are complex numbers, trigonometric identities, systems of equations and analytic geometry. The purpose of this course is to provide knowledge and skills in mathematics of advanced algebraic and trigonometric concepts for applications in situations that require the use of quantitative processes. This course serves as a core requirement in many baccalaureate programs and provides prerequisite concepts and skills needed in business, mathematics, engineering and in the physical sciences for continued study in calculus.

## Major Units

- Algebra Review
- Functions
- Trigonometry
- Analytic Geometry
- Systems of Equations
- Discrete Algebra

## Educational/Course Outcomes

Student learning will be assessed by a variety of methods, including, but not limited to, quizzes and tests, journals, essays, papers, projects, laboratory/clinical exercises and examinations, presentations, simulations, portfolios, homework assignments, and instructor observations.

**Cognitive** Each student will be expected to *Identify/Recognize*. . .

- all conic sections;
- the difference between a sequence and a series;
- the trigonometric values for the angles:  $0^\circ$ ,  $30^\circ$ ,  $45^\circ$ ,  $60^\circ$ ,  $90^\circ$ ,  $180^\circ$ ,  $270^\circ$ ;
- polynomial, exponential, and logarithmic functions.

**Performance** Each student will be expected to *Demonstrate/Practice*. . .

- the solution set of linear and quadratic equations and inequalities algebraically and with a graphing calculator;
- graph polynomial and rational functions with or without a graphing calculator;
- solve equations and inequalities involving third and fourth degree polynomials algebraically and with a graphing calculator;
- solve equations involving exponential or logarithmic functions algebraically and with a graphing calculator;
- solve systems of equations and inequalities algebraically and with a graphing calculator;
- apply matrix theory to solve systems of equations algebraically and with a graphing calculator;
- graph the trigonometric functions;
- solve equations involving trigonometric functions;
- identify and evaluate the principal values for the conic sections;
- transform a polynomial function and conic sections by translation or rotation of axes;
- calculate the determinant of a matrix;
- prove statements true by mathematical induction;
- find the sum of terms or the  $n^{\text{th}}$  term of a series;
- solve equations involving higher degree polynomials using complex numbers.