Course Description

Topics: Functions and Their Graphs, Equations, Inequalities, Polynomial and Rational Functions, Exponential and Logarithmic Functions, Geometry, Trigonometric Functions, Inverse Trigonometric Functions, Trigonometric Identities, Trigonometric Equations, Trigonometric Applications, Conic Sections, Sequences, Series, and the Binomial Theorem.

Instructor:	Dr. Peter J. Trushel
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Office hours:	by appointment

Organization

In-class workload:	8 hours lecture
Out-of-class workload:	8 to 16 hours per week

Prerequisites: Math 172 or 063 or ABMA 063 or Math11 by assessment.

Textbooks

Beecher, Penna, and Bittinger, *Algebra and Trigonometry and Precalculus*, Peaarson Education, Inc. 2002
Geometry: Trushel, Peter, *Essentials of Geometry2-dimensional and 3-dimensional Formulas*, March 2004

Calculator

Any scientific calculator may be used on tests. **Programmable calculators may not be used during tests.**

Evaluation

5 Term Tests:	50% of Final Mark
Comprehensive Final Exam:	50% of Final Mark

Test Dates

The five two hour term tests will be held on the following Tuesdays: 20 April (Test 1), 4 May (Test 2), 18 May (Test 3), 1 June (Test 4), and 15 June (Test 5).

Percentage Letter Grade Conversion

Percentage	Letter Grade
95 to 100	A+
90 to 94	A
85 to 89	A-
80 to 84	B+
75 to 79	B
70 to 74	B-
65 to 69	C+
60 to 64	C
50 to 56	D
Below 50	F

Course Outline

Chapter 1   Graphs, Functions, and Models
Section (hours) Topic

1.2 (1)   Functions and Graphs
1.3 (1)   Linear Functions, Slope, and Applications
1.4 (1)   Equations of Lines
1.5 (1)   More on Functions
1.6 (3)   Symmetry and Transformation
Total 7

Chapter 2   Functions, Equations, and Inequalities
Section (hours) Topic

2.3 (2)   Quadratic Equations, Functions, and Models
2.4 (2)   Analyzing Graphs of Quadratic Functions
Total 4

Chapter 3   Polynomial and Rational Functions
Section (hours) Topic

3.1 (1)   Polynomial Functions and Models
3.2 (2)   Polynomial Division; The Remainder and Factor Theorem
3.3 (2)   Theorems about Zeros of Polynomial Functions
3.4 (2)   Rational Functions
Total 7

Chapter 4   Exponential and Logarithmic Functions
Section (hours) Topic

4.1 (2)   Composite and Inverse Functions
4.2 (1)   Exponential Functions and Graphs
4.3 (1)   Logarithmic Functions and Graphs
4.4 (2)   Properties of Logarithmic Functions
4.5 (2)   Solving Exponential and Logarithmic Equations
4.6 (2)   Applications and Models: Growth and Decay
Total 10

Supplemental Material   Geometry
Section (hours) Topic

Geometry 1 (2)   Similar Triangles and Similar Figures
Geometry 2 (2)   Unit Circle Definitions of the Trigonometric Functions
Geometry 3 (2)   Areas and Perimeters of Plane Regions
Geometry 4 (2)   Areas and Volumes of Solids
Total 8

Outline (continued)

Chapter 5   The Trigonometric Functions
Section (hours) Topic

5.2 (2)   Applications of Right Triangles
5.3 (2)   Trigonometric Functions of Any Angle
5.4 (2)   Radians, Arc Length, and Angular Speed
5.5 (2)   Circular Functions: Graphs and Properties
5.6 (2)   Graphs of Transformed Sine and Cosine Functions
Total 10

Chapter 6   Trigonometric Identities, Inverse Functions, and Equations
Section (hours) Topic

6.1 (2)   Identities: Pythagorean and Sum and Divergence
6.2 (2)   Identities: Cofunction, Double-Angle, and Half-Angle
6.3 (2)   Proving Trigonometric Identities
6.4 (2)   Inverses of the Trigonometric Functions
6.5 (2)   Solving Trigonometric Equations
Total 10

Chapter 7   Applications of Trigonometry
Section (hours) Topic

7.1 (2)   The Law of Sines
7.2 (2)   The Law of Cosines
7.3 (2)   Complex Numbers: Trigonometric Form

Total 6

Chapter 9   Conic Sections

Section (hours) Topic

9.1 (2)   The Parabola
9.2 (2)   The Circle and the Ellipse
9.3 (2)   The Hyperbola
Total 6

Chapter 10   Sequences, Series, and Combinatorics

Section (hours) Topic
10.1 (1)   Sequences and Series
10.2 (1)   Arithmetic Sequences and Series
10.3 (1)   Geometric Sequences and Series
10.7 (1)   The Binomial Theorem
Total 4

Lecture Total   72
Tests   10
Holidays   6
Total Hours   88

Study Suggestions

- **Memorizing Formulas**

  o   Use flash cards

  o   Every time you do a problem begin by writing the relevant formulas down.

  o   Find connections between various formulas. Many connections have been suggested in class.

- **How to approach your homework**

  o   When you do homework questions you should make an honest effort to solve them before you look at the solutions.

  o   When you do homework questions you should determine as nearly as possible the exact areas with which you are having problems.

  o   Come and see PJ or the math tutor in room tech 142 for help with any homework questions you do not understand.

- **Preparing for tests**

  o   Check the outline on the web to determine the exact sections that will be covered on the test.

  o   Review the flash card formulas that will be required for the material that will be covered on the test.

  o   Review the homework solutions for the material that will be covered on the test.

  o   It is very useful for you to form study teams and help each other with homework questions and during review for tests.