

# Math 2412: Precalculus

## Spring 2022 Syllabus

### Disclaimer

This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date information contact the instructor.

### Instructor Information

Dr. Jerry Blankenship  
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### Office Hours

By appointment

### Major Course Requirements

#### Tests

We will have two tests and a cumulative final examination. The exact dates and coverage of the tests will be announced in class. However, as a planning guide, you may expect to take the first test the eighth week of the semester and the second test the thirteenth week of the semester. The final exam will be held no later than the time specified by the San Saba High School final exam schedule.

There are no make-up exams. To compensate for unavoidable circumstances, however, if it helps you, I will replace your lowest exam score with your final exam score.

#### Daily Work

Daily work will consist primarily of exercises from the textbook. A quiz will be taken at the end of each chapter.

#### Grade Calculations

Your homework average will count 15%, quizzes 15%, each test 20%, and the final exam, 30% (50% if it replaces your lowest test grade). Then 90 and above is an A, 80-89 is a B, 70-79 is a C, 60-69 is a D, and less than 60 is an F.

## Student Learning Outcomes

- 1. Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Students will read, interpret and use the vocabulary, symbolism and basic definitions used in precalculus pertaining to the real numbers; exponents and radicals; polynomials, factoring and rational expressions; equations and inequalities; functions, polynomial and rational functions; inverse and logarithmic functions; graphs and their transformations; trigonometric functions; types of angle measure and notation; parts of triangles and circles; parabolas, ellipses and hyperbolas; and asymptotes.
- 2. Students will describe the fundamental principles including the mathematical rules and theorems arising from the concepts covered in this course.** Students will identify and apply the laws and formulas that result from the definitions; for example, rules of exponents, exponential and logarithmic properties, the quadratic formula, slope and formulas for the equations of lines, the fundamental trigonometric identities, properties of angles and triangles, characteristics of the trigonometric functions and inverse trigonometric functions, formulas of the conic sections, translations of axes and formulas relating polar and rectangular coordinates.
- 3. The students will apply course material using techniques covered in this course to solve problems.** Students will use facts, formulas and techniques learned in this course to simplify algebraic expressions; graph functions; solve equations and recognize and graph trigonometric and inverse trigonometric functions, conic sections and algebraic functions.
- 4. The students will develop skills, competencies and thought processes sufficient to support further study or work in related fields.** Students will acquire a level of proficiency in the fundamental concepts and applications in precalculus necessary to succeed in calculus.

## Required Texts

*Precalculus: Functions and Graphs*, Twelfth Edition, by Swokowski and Cole, Brooks/Cole

### 1. Topics From Algebra

1.2 Exponents and Radicals

1.3 Algebraic Expressions

1.6 Inequalities

### 2. Functions and Graphs

- 2.1 Rectangular Coordinate Systems
- 2.2 Graphs of Equations
- 2.3 Lines
- 2.4 Definition of Function
- 2.5 Graphs of Functions
- 2.7 Operations on Functions

### **3. Polynomial and Rational Functions**

- 3.1 Polynomial functions of Degree Greater than 2
- 3.5 Rational Functions

### **4. Inverse, Exponential and Logarithmic Functions**

- 4.1 Inverse Functions
- 4.2 Exponential Functions
- 4.3 The Natural Exponential Function
- 4.4 Logarithmic Functions
- 4.5 Properties of Logarithms
- 4.6 Exponential and Logarithmic Equations

### **5. Trigonometric Functions**

- 5.1 Angles
- 5.2 Trigonometric Functions of Angles
- 5.3 Trigonometric Functions of Real Numbers
- 5.4 Values of the Trigonometric Functions
- 5.5 Trigonometric Graphs
- 5.6 Additional Trigonometric Graphs

### **6. Analytic Trigonometry**

- 6.2 Trigonometric Equations
- 6.3 The Addition and Subtraction Formulas
- 6.4 Multiple-Angle Formulas
- 6.6 The Inverse Trigonometric Functions

### **10. Topics From Analytic Geometry**

- 10.1 Parabolas
- 10.2 Ellipses
- 10.3 Hyperbolas
- 10.4 Plane Curves and Parametric Equations
- 10.5 Polar Equations

## **Subject Matter**

We will be studying precalculus which includes an overview of topics from algebra, trigonometry and analytic geometry that are needed for calculus, including equations and inequalities, functions and inverse functions, trigonometric functions and equations.

The schedule listed below is tentative, and subject to change and adaptation. For current information about course topics, contact the instructor.

<b>Week</b>	<b>Sections</b>
1	1.2, 1.3
2	1.6, 2.1, 2.2
3	2.2, 2.3, 2.4
4	2.5, 2.7, 3.1
5	3.1, 3.5
6	4.1, 4.2, 4.3
7	4.4, 4.5, 4.6
8	4.6, Review for Test 1, Test 1
9	5.1, 5.2, 5.3
10	5.4, 5.5, 5.6
11	6.2, 6.3, 6.4
12	6.4, 6.6
13	Review for Test 2, Test 2
14	10.1, 10.2, 10.3
15	10.5, 10.4, Review for Final Exam
16	Review for Final Exam, Final Exam

## **Honor Code**

Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is available on the web at <http://www.angelo.edu/forms/pdf/honorcode5.pdf>

