

Mathematics 2412 – PreCalculus
Monday – Friday
6th and 8th Period, Room 112

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Conference: 4th Period

Course Description

MATH 2412 PreCalculus (4 college credits): Since this class functions as both a high school junior/senior mathematics class and a dual credit precalculus class, it will not only cover the Pre-Calculus TEKS 111.42, but also the Core Curriculum Student Learning Objectives used in Texas colleges.

Textbook: *PreCalculus, Concepts through Functions*, 4E, 2019, by Sullivan and Sullivan.

Prerequisite: MATH 1314 or TSI.

Grading: Tests 75%, Homework 25%, Final Exam 25%

Your Responsibilities: This is a college course. You will be held to the same standards as college students. In order to be successful, you must do the following:

- 1. Attend class regularly.**
- 2. Take notes.**
- 3. Ask questions during class.**
4. Do your homework and turn it in **ON TIME**.
5. Study for tests.

Common Courtesy:

1. Turn off all cell phones or any other electronic devices before entering the classroom. Place these items in your backpacks. I do not want to see them on your desk or in your laps. **THIS MEANS NO TEXTING DURING CLASS!**
2. Please refrain from carrying on personal conversations once class has started. Be courteous to your peers when they are responding in class by listening to what they have to say.

Miscellaneous

1. If you will be absent on a test day, you must make arrangements to take the test prior to your absence or the day the you return.
2. Exams are to be finished on time – as instructed in class. No additional time will be given.
3. **To receive credit for a question, you must show your work clearly, in order, and legibly.**
4. If you turn in an assignment late, 10 points will be deducted per day that it is late. If you will be absent on the day an assignment is due, then the assignment may be turned in the first day you are back at school without penalty.
5. **The use a graphing calculator is not allowed for most of this course.**
6. If you are absent, it is your responsibility to contact a classmate or me to find out what you missed.
7. **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>.
8. Persons with disabilities which may warrant academic accommodations must contact the Student

Affairs Office, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

Ms. Dallas A. Swafford, Director of Student Disability Services
Houston Harte University Center, Suite 112 Phone: 325-942-2047 or by E-mail:
dallas.swafford@angelo.edu

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Student Learning Outcomes

- 1. The students will demonstrate an understanding of 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 functions; exponential and logarithmic functions; graphs and their transformations; six trigonometric functions; types of angle measure and notation; parts of triangles and circles; parabolas, ellipses, and hyperbolas; asymptotes; and vectors.
- 2. The 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 directly 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, translation of axes, and formulas relating polar and rectangular coordinates.
- 3. The students will apply course material using techniques and procedures covered in this course to solve problems.** Students will utilize the facts, formulas, and the techniques learned in this course to simplify algebraic expressions; graph functions; solve equations; prove trigonometric identities; solve trigonometric equations; solve various types of triangle problems; and recognize and graph trigonometric and inverse trigonometric functions, conic sections, algebraic curves, polar equations, and parametric equations.
- 4. The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will acquire a level of proficiency in the fundamental concepts and applications in precalculus necessary for success in calculus.

Course Content

Textbook: *PreCalculus, Concepts through Functions*, 4E, 2019, by Sullivan and Sullivan.

- 1. Functions and their Graphs:** Rectangular Coordinate Systems; Graphs of Equations; Lines; Definition of Function; Graphs of Functions; Quadratic Functions; Operations on Functions.
- 2. Polynomials and Rational Functions:** Polynomial Functions of Degree Greater Than 2; Rational Functions.

3. **Exponential and Logarithmic Functions:** Inverse Functions; Exponential Functions; The Natural Exponential Function; Logarithmic Functions; Properties of Logarithms; Exponential and Logarithmic Equations.
4. **Trigonometry:** Angles; Trigonometric Functions of Angles; Trigonometric Functions of Real Numbers; Values of the Trigonometric Functions; Trigonometric Graphs; Additional Trigonometric Graphs; Applied Problems.
5. **Analytic Trigonometry:** Trigonometric Equations; The Addition and Subtraction Formulas; Multiple-Angle Formulas; The Inverse Trigonometric Functions.
6. **Additional Topics in Trigonometry:** The Law of Sines; The Law of Cosines; Vectors; The Dot Product.
10. **Topics in Analytic Geometry:** Parabolas; Ellipses; Hyperbolas; Plane Curves and Parametric Equations; Polar Coordinates.