

**MAT 172A**  
**PRECALCULUS TRIGONOMETRY LAB**

**COURSE DESCRIPTION:**

Prerequisites: MAT 171

Corequisites: MAT 172

This course is a laboratory for MAT 172. Emphasis is on experiences that enhance the materials presented in the class. Upon completion, students should be able to solve problems, apply critical thinking, work in teams, and communicate effectively. This course has been approved to satisfy the Comprehensive Articulation Agreement premajor and/or elective course requirement. Course Hours Per Week: Lab, 2. Semester Hours Credit, 1.

**LEARNING OUTCOMES:**

Students will be able to apply algebraic and trigonometric concepts and techniques and utilize appropriate technology to interpret and solve applied problems. Students will display proficiency by demonstrating the following competencies:

- a. Individually devise logical plans of solution for non-routine problems.
- b. Defend the execution of those plans of solution.
- c. Go to sources different from the text for further information related to specified class topics, gather that information, and clearly communicate it to other class members.
- d. Work with diverse groups of students to synthesize group solutions for non-routine problems.
- e. Work within a group to execute and defend group solutions to posed problems.

**OUTLINE OF INSTRUCTION:**

- I. Trigonometric functions
  - A. Angles and their measure
  - B. Trigonometric functions: unit circle approach
  - C. Properties of the trigonometric functions
  - D. Graphs of the sine and cosine functions
  - E. Graphs of the tangent, cotangent, cosecant and secant functions
  - F. Phase shifts; sinusoidal curve fitting
  
- II. Analytic trigonometry
  - A. The inverse trigonometric functions
  - B. Trigonometric identities
  - C. Sum and difference formulas
  - D. Double-angle and half-angle formulas
  - E. Trigonometric equations

- III. Applications of trigonometric functions
  - A. Right triangle trigonometry
  - B. Law of Sines
  - C. Law of Cosines
  - D. Area of a Triangle
  
- IV. Polar coordinates; vectors
  - A. Polar coordinates
  - B. Polar equations and graphs
  - C. The complex plane
  - D. DeMoivre's Theorem
  - E. Vectors
  
- V. Analytic Geometry
  - A. Conics
  - B. The parabola
  - C. The ellipse
  - D. The hyperbola
  - E. Plane curves and parametric equations
  
- VI. Computer-algebra system

**REQUIRED TEXTBOOKS AND MATERIALS:**

Sullivan, Michael and Michael Sullivan, III. Precalculus Enhanced with Graphing Utilities. 5<sup>th</sup> Ed. Pearson Prentice Hall, 2009.

TI-83/84 Graphing Calculator

**STATEMENT FOR STUDENTS WITH DISABILITIES:**

Students who require academic accommodations due to any physical, psychological, or learning disability are encouraged to request assistance from a disability services counselor within the first two weeks of class. Likewise, students who potentially require emergency medical attention due to any chronic health condition are encouraged to disclose this information to a disability services counselor within the first two weeks of class. Counselors can be contacted by calling 536-7207, ext. 1413 or by visiting the Student Development Office in the Phail Wynn Jr. Student Services Center, room 1309.