

Course Objectives/Course Outline
Spokane Community College

Course Title: Precalculus II

Prefix and Course Number: MATH& 142

Course Learning Outcomes:

By the end of this course, a student should be able to:

- Understand how angles are measured in degrees and radians and calculate the conversion between the two.
- Construct the six trig functions using a unit circle and a right triangle including exact values for the major angles.
- Apply all six trigonometric functions and their properties (domain, range, period, even/odd, signs by quadrant, one-to-one and restricted domains).
- Prove trigonometric identities.
- Solve trigonometric equations.
- Solve application and modeling problems using trigonometric functions to verify and interpret solutions in context of the problem.
- Graph the trigonometric and inverse trigonometric functions.
- Apply transformations to the trigonometric functions.
- Apply the trigonometric formulas.
- Apply DeMoivre's Theorem.
- Understand and apply vectors in two-space.
- Graph and use parametric equations and polar coordinates.
- Analyze equations that result in parabolas, ellipses, hyperbolas, circles.
- Demonstrate appropriate problem solving skills and justify solutions (exact and approximate).

Course Outline:

- I. The Trigonometric (Circular) Functions
 - A. Trigonometric Functions
 - i. Definitions
 - ii. Basic Graphs
 - iii. Transformations of graphs
 - B. Angles and Rotations
 - C. Right Triangle Trigonometry
- II. Trigonometric Identities, Inverse Functions, and Equations
 - A. Identities
 - i. Pythagorean
 - ii. Sum and Difference
 - iii. Cofunction
 - iv. Double-Angle
 - v. Half-Angle
 - vi. Power Reducing
 - vii. Product to Sum
 - viii. Sum to Product
 - B. Proving Trigonometric Identities
 - C. Inverses of the Trigonometric Functions
 - D. Solving Trigonometric Equations
- III. Applications of Trigonometry
 - A. Applications of Right Triangles
 - B. Solving Triangles
 - i. The Law of Sines

- ii. The Law of Cosines
 - iii. Area
 - C. Complex Numbers
 - i. Trigonometric Form
 - ii. Powers
 - iii. Roots
 - D. Vectors
- IV. Analytic Geometry Topics
 - A. Parabolas
 - B. Ellipses
 - C. Hyperbolas
 - D. Rotation of Axes of Conic Sections