Course Title: Trigonometry
Course No.: MAT 113 No. of Credits: 2
Contact hrs/wk: 2 hrs/wk Lecture/Discussion
Course Prerequisites: (a) A grade of C or better in MAT 110 or (b) concurrent registration in MAT 110 or (c) placement based on placement test score

Catalog description:
Trigonometric functions, their basic properties and graphs, identities, inverse trigonometric functions, solving trigonometric equations, solutions of triangles

Course content (list of topics normally covered):
1. Angles and Applications
   - Radian measure;
   - arc length;
   - area of a sector;
   - angular velocity

2. Trig Functions-Basic Definitions
   - Angles in standard position;
   - quadrantal angles;
   - circular functions;
   - unit circle

3. Right Triangle Trigonometry and Applications
   - Trig functions of acute angles, complementary angles, special angles;
   - calculator values of trig functions;
   - finding the angles given the trig function;
   - Applications: angles of elevation and depression;
   - bearing; vectors, navigation;
   - inclined planes

4. Trig Functions of Any Angle
   - Coterminal angles;
   - negative angles;
   - reference angles

5. Graphs of Trig Functions
   - Periodic phenomena;
   - amplitude, period, phase shift of sine, cosine, and tangent functions;
   - graphs of reciprocal functions

6. Basic Identities
7. Trig Functions of Two Angles
- Addition, Subtraction, double angle, half angle formulas;
- Product to sum and sum to product formulas;
- Harmonic functions

8. Oblique Triangle Solution and Applications
- Law of Sines;
- Law of Cosines;
- Area Formulas

9. Inverse Trig Functions and Solving Trig Equations
- Definitions and graphs of inverse trig functions;
- Basic and complete solutions of trig equations

10. Optional Topics
- Complex Numbers: Polar form; multiplication and division in polar form; De Moivre's Theorem; Roots of Complex Numbers
- Polar Coordinates: Conversion for rectangular to polar and vice-versa; polar equations and graphs

Content-based department proficiencies:
- Basic concepts of the circular functions
- Applications of triangle trigonometry
- Use of trig identities
- Understanding of graphs of the trig functions
- Understanding of inverse trig functions

Colleges-wide proficiencies assigned to course:

Students should be able to demonstrate the following:

A. Analytical skills Performance Indicators: Students should be able to:
1. Interpret and synthesize information and ideas.
4. Select and apply scientific and other appropriate methodologies.

B. Quantitative skills Performance Indicators: Students should be able to:
1. Solve quantitative and mathematical problems.
2. Interpret graphs, tables, and diagrams.

Representative textbooks used for the courses:

- Trigonometry enhanced with Graphing Utilities, 2nd edition, Sullivan and Sullivan