

## **MAT 126 Technical Algebra and Trigonometry**

### **MAT 126 Course Objectives**

Upon completion of this course, the student can:

1. Solve problems involving ratio, proportion, direct, inverse, and joint variation.
2. Solve rational equations.
3. Define trigonometric functions and use them to solve right triangles.
4. Solve triangles using the law of sines and the law of cosines.
5. Identify the vector concept and the components of vectors, and add vectors.
6. Determine the solutions to simultaneous linear equations using determinants.
7. Solve quadratic equations by the processes of factoring, completing the square, and the quadratic formula.
8. Apply radians and radian measurements including their applications to rotating objects.
9. Utilize Phasor algebra to perform basic operations on complex numbers.
10. Utilize exponent and logarithmic equations such as population growth, time constants and pH scale.
11. Perform conversions between number systems such as decimal, binary, octal, and hexadecimal.
12. Use a scientific calculator.
13. Solve occupation specific application problems using the above competencies.

### **MAT 126 Course Outline**

- A. Algebra
  1. Variation
  2. Quadratic Equations
    - a. Factoring
    - b. Completing the square
    - c. Quadratic formula
  3. Rational Equations
  4. Ratio and Proportion
  5. Rectangular Coordinate Plane
  6. Phasor Form
  7. Systems of Linear Equation Solution by Determinants
  8. Exponential Equations
  9. Logarithmic Equations
  10. Complex Numbers
- B. Trigonometry
  1. Basic Definitions of Functions

2. Radians
3. Law of Sines
4. Law of Cosines
5. Polar Coordinates

C. Number systems

1. Decimal
2. Binary
3. Octal
4. Hexadecimal

D. Linear Equations

1. Graph Linear Equations
2. Write Equations of Lines