

## CUMBERLAND COUNTY COLLEGE

**Course: MA 120 College Trigonometry**

**Credits: 3**

**Prerequisites**

MA 110 or placement by Accuplacer

**Description**

A continuation of MA 110. Topics include angular measure, trigonometric functions, identities and equations, curve sketching, inverse trigonometric functions, applications on right triangles, oblique triangles, vectors, complex numbers, polar coordinates, and conic sections. This course is designed for students who may continue in math, science, technology or business related fields.

**Learning Outcomes**

At the completion of this course, students should be able to:

- Convert and apply radian and degree measure
- Apply angles and trigonometric functions to model and solve real-life problems
- Evaluate trigonometric functions using a unit circle, acute angles, or calculator
- Interpret and evaluate trigonometric functions using fundamental trigonometric identities, reference angles
- Create and interpret graphs of the trigonometric functions, inverse trigonometric functions, composition of trigonometric functions, and inverse functions
- Utilize fundamental trigonometric identities to evaluate trigonometric functions, simplify trigonometric expressions, and rewrite trigonometric expressions
- Apply trigonometric identities to verify other trigonometric identities, solve trigonometric equations, and construct further trigonometric identities
- Apply the law of sines and the law of cosines to solve oblique triangles and model real-life problems
- Recognize a conic as the intersection of a plane and double-napped cone, convert information, or a general form of equation of a conic, to its standard form.
- Evaluate, analyze, graph a set of parametric equations for a given value of the parameter and convert a set of parametric equations as a single rectangular equation
- Plot points on the polar coordinate system, and convert points and equations from rectangular to polar form.

**Related General Education Outcomes**

- Students will translate quantifiable problems into mathematical terms and solve these problems using mathematical or statistical operations.
- Students will construct graphs and charts, interpret them, and draw appropriate conclusions.

## **Topical Outline**

### Trigonometric Functions

- Angles and their measure
- The Unit Circle: trigonometric functions of real numbers
- Trigonometric functions of angles
- Graphs of Sine and Cosine functions
- Graphs of other trigonometric functions
- Inverse trigonometric functions

### Applications of trigonometric functions (triangle trigonometry)

- Right-triangle trigonometry
- The Law of Sines
- The Law of Cosines

### Analytic Trigonometry

- Trigonometric identities and equations
- Trigonometric equations
- Sum and Difference formulas
- Double-Angle and Half-Angle formulas
- Product-to-Sum and Sum-to-Product formulas

### Analytic Geometry (including Conics and Polar and Parametric Equations)

- Conic Sections: overview
- The Parabola
- The Ellipse
- The Hyperbola
- Parametric Equations
- Polar Coordinates

## **Required Texts and Other Materials**

Precalculus, A Unit Circle Approach by Ratti-McWaters, 2<sup>nd</sup> edition: Pearson. 2014

### **Student Assessment:**

Assessment may be accomplished through projects, portfolios, online assignments, exams, presentations and/or papers.

### **Academic Integrity**

Plagiarism is cheating. Plagiarism is presenting in written work, in public speaking, and in oral reports the ideas or exact words of someone else without proper documentation. Whether the act of plagiarism is deliberate or accidental [ignorance of the proper rules for handling material is no excuse], plagiarism is, indeed, a “criminal” offense. As such, a plagiarized paper or report automatically receives a grade of **ZERO** and the student may receive a grade of **F** for the semester at the discretion of the instructor.

### **Available Resources**

If you are having difficulty with work in this class, tutoring is available through the Success Center. If you think that you might have a learning disability, contact Project Assist at 856.691.8600, x1282 for information on assistance that can be provided to eligible students.

**(List availability of open labs and/or writing center)**

**Before Withdrawing From This Course**

If a student experiences adverse circumstances while enrolled in this course and considers withdrawing, s/he should see an advisor (division or advisement center) BEFORE withdrawing from the class. A withdrawal may cause harmful repercussions to completion rate standards and overall GPA which can limit or eliminate future financial aid in addition to causing academic suspension.