City Colleges of Chicago
Course Title: Plane Trigonometry

Length of course: 16 Weeks

Contact Hours: 3 Contact Hours

Credit Hours: 3 Credit Hours

Lecture Hours: 3 Lecture Hours

Lab Hours:

Weekly Plan: 3 Hours

Catalogue Description:

In this course, students will develop an understanding of the trigonometric functions and apply trigonometry to the sciences. Topics include definitions, properties and graphical characteristics of trigonometric functions; radian measure; trigonometric identities and equations; Law of Sines and Law of Cosines; inverse trigonometric functions; DeMoivre's Theorem; and vectors. Technology and writing assignments will be used throughout the course as appropriate. Applications involving problem-solving skills will be emphasized throughout the course.

Students the Course is Expected to Serve:

This course is intended for students who are science or engineering majors and for students whose programs require trigonometry.

Pre-requisites:

Prerequisite -- MATH 140 With a minimum grade of 'C' or Placement Test -- or Consent of Chair --

Course Objectives:

1. Demonstrate an understanding of trigonometric functions and their behaviors.
2. Apply trigonometric concepts to contextual (real-world) scenarios.
3. Use technology to explore trigonometric concepts.

Student Learning Outcomes:

Upon satisfactory completion of the course, students will be able to:

A. Define the sine, cosine, secant, cosecant, tangent, and cotangent functions and their inverses, including the unit circle and right-triangle definitions of these functions.
B. Compute the exact values of trigonometric functions whose reference angle measures are 0º, 30º, 45º, 60º and 90º.
C. Apply right-angle trigonometry to a contextual (real-world) scenario.
D. Apply circular motion to a contextual (real-world) scenario.
E. Graph a trigonometric function using its properties (e.g., periodicity, amplitude, phase shifts, etc.).
F. Verify trigonometric identities.
G. Solve trigonometric equations.
H. Apply the sum, difference, double-angle, and half-angle identities to calculating exact values of trigonometric functions, verifying identities, and solving equations.
I. Apply the Law of Sines and the Law of Cosines to a contextual (real-world) scenario.
J. Apply trigonometric functions to vectors and other basic concepts of physics (e.g., force, velocity, pendulum movement, basic current).
K. Determine roots and powers of complex numbers by applying DeMoivre's Theorem.
L. Convert between rectangular and polar coordinates.

Topical Outline:

Week	Topic
1 - 4	Unit Circle & Right Triangle Definition of Trigonometric Function
5 - 6	Circular Motion & Applying Trigonometric Functions
7 - 9	Graphing Trigonometric Functions
10 - 11	Trigonometric Identities
12 - 13	Law of Sines & Law of Cosines
14 - 16	Vectors & Applications

Calendar:

Methods of Evaluation:

Total Percentage: 0%

The weight given to exams, quizzes, and other instruments used for evaluation will be determined by the instructor.

Methods of Assessment:

Exams, quizzes, homework and other assessments will be used as appropriate to measure student learning.

Methods of Instruction:

Problem-based and contextual activities, collaborative-learning techniques, and lecture will be used as appropriate.

Recommended Text:

1. Lial, L., Hornsby, J., & Schneider, D. *Trigonometry* 8th Edition, Addison Wesley, 2004 ISBN: 0321227360
2. Barnett, Ziegler, & Byleen *Analytic Trigonometry* 9th Edition, John Wiley & Sons, Inc., 2006