STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

COURSE NUMBER – COURSE NAME
MATH 131 - COLLEGE TRIGONOMETRY

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Canino School of Engineering Technology

Department: MATHEMATICS DEPARTMENT

Semester/Year: Fall/2018

A. **TITLE**: COLLEGE TRIGONOMETRY

B. **COURSE NUMBER:** MATH 131

C. **CREDIT HOURS: (Hours of Lecture, Laboratory, Recitation, Tutorial, Activity)**

 # Credit Hours: 4
 # Lecture Hours: 4 **per week**
 # Lab Hours: 0 **per week**
Other: **per week**

Course Length: 15 **Weeks**

D. **WRITING INTENSIVE COURSE**: Yes ☐ No ☒

E. **GER CATEGORY: None:** ☐ **Yes:** GER
***If course satisfies more than one*:** GER

F. **SEMESTER(S) OFFERED: Fall** ☐ **Spring** ☐ **Fall & Spring** ☒

G. **COURSE DESCRIPTION:**

This course is designed for those students who lack the trigonometry skills needed to perform successfully in Calculus I. Topics include: angle measurement; right triangle trigonometry; trigonometric identities; trigonometric equations; graphs of trigonometric functions; inverse trigonometric functions; oblique triangles; and exponential and logarithmic functions.

H. **PRE-REQUISITES: None** ☐ **Yes** ☒ **If yes, list below:**

College Algebra (Math 121) with a grade of C or better recommended, or NYS Regents Math B, or Course III or permission of the instructor.

CO-REQUISITES: None ☒ **Yes** ☐ **If yes, list below:**

I. STUDENT LEARNING OUTCOMES: (*see key below*)

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

Course Student Learning Outcome [SLO]	***Program Student Learning Outcome [PSLO]***	***GER** [If Applicable]*	***ISLO & SUBSETS***	
Convert degrees to radians and vice versa		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Solve right triangles		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Solve oblique triangles using the Law of Sines and Law of Cosines		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Solve applied problems involving triangles		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Use fundamental trigonometric identities to simplify expressions, prove trigonometric identities, and solve trigonometric equations		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Solve trigonometric problems using sum and difference of two angles, double angle, or half angle identities		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
Solve exponential and logarithmic equations, including application problems		GER 1	3-Found Skills ISLO ISLO	QTR Subsets Subsets Subsets
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KEY	**Institutional Student Learning Outcomes [ISLO 1 – 5]**
ISLO #	**ISLO & Subsets**
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

*Include program objectives if applicable. Please consult with Program Coordinator

J. APPLIED LEARNING COMPONENT: Yes ☐ No ☒

If YES, select one or more of the following categories:

- ☐ Classroom/Lab
- ☐ Internship Clinical
- ☐ Placement
- ☐ Practicum
- ☐ Service Learning
- ☐ Community Service
- ☐ Civic Engagement
- ☐ Creative Works/Senior Project
- ☐ Research
- ☐ Entrepreneurship (program, class, project)

K. TEXTS:

It is recommended that students may purchase the following textbook: Trigonometry, A Graphing Approach 4th Edition; by Ron Larson, Robert P. Hostetler and Bruce H. Edwards; Houghton Mifflin (2005)

L. REFERENCES:

Many materials in the Math Lab and online will aid the students with mastery of this subject

M. EQUIPMENT: None ☒ Needed:

N. GRADING METHOD: A-F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

- **Homework**
- **Quizzes**
- **Exams**
- **Projects**

P. DETAILED COURSE OUTLINE:

I. Functions

A. Definition of a function.
B. Combining functions and the composition of two functions.
C. Definition of the inverse of a function.

II. Angle Measurement

A. Radian measure.
B. Method for converting degrees to radians.

III. Trigonometric Functions

A. Definition of the trigonometric functions.

B. Basic Trigonometric identities.
C. Definition of the inverse trigonometric functions.

IV. Solving Triangles

A. Pythagoreans Theorem and the identity cos^2 A+sin^2 A=1.
B. Law of Sines.
C. Law of Cosines.

V. Area

A. Formulas for the area of a triangle including A=1/2 ab sin (C) and Heron's formula.

VI. Graphs of trigonometric functions

A. Sine functions of the form y=A sin (Bx+C)+D for various A, B, C, and D.
B. Cosine functions of the form y=A cos (Bx+C)+D for various A, B, C, and D.
C. Other trig functions such as y=tan (x), y=cot (x), y=sec (x), and y=csc (x).
D. Inverse trig functions such as y=sin^(-1) (x), y=cos^(-1) (x) , and y=tan^(-1) (x).

VII. Solving Equations

A. Trigonometric identities
B. Trigonometric equations
C. Sum and Difference formulas for sine and cosine.
D. Double Angle Formulas for sine and cosine.
D. Half angle formulas for sine and cosine.

VIII. Logarithmic and Exponential Functions

A. Definition of logarithmic and exponential functions.
B. Properties of logarithmic functions.
C. Graphing exponential and logarithmic functions.
D. Applications of logarithmic and exponential functions.

Q. <u>LABORATORY OUTLINE</u>: None ☒ Yes ☐