COURSE OUTLINE OF RECORD

Number: MATH G120  TITLE: Trigonometry

ORIGINATOR: Gary Kirby Jr.  

FORMERLY KNOWN AS: 

CROSS LISTED COURSE: 

SEMESTER UNITS: 3.0

HRS LEC: 54.0  HRS LAB: 0.0  HRS OTHER: 0.0

CONTACT HRS TOTAL: 54.0

STUDY NON-CONTACT HRS RECOMMENDED: 108.0

CATALOG DESCRIPTION:

This course is a study of the circular and trigonometric functions. The topics include inverses, graphs, solutions of triangles, conditional equations, identities, vectors, complex numbers, polar coordinates, parametric equations, and applications of these concepts. A scientific calculator is recommended.

JUSTIFICATION FOR COURSE:

PREREQUISITES:

- GWC Math Placement Level of 50 or higher.
- MATH G030: Intermediate Algebra with a minimum grade of C or better
  or
- OCC Math Placement Level of 50 or higher.
  or
- MATH A030: Intermediate Algebra with a minimum grade of C or better
  or
- CCC Math Placement Level of 70 or higher.
  or
- MATH C030: Intermediate Algebra with a minimum grade of C or better
  or
- MATH G040: Accelerated Elementary and Intermediate Algebra with a minimum grade of C or better

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES:

Mathematics

MATERIAL FEE: Yes [ ] No [X] Amount: $0.00

CREDIT STATUS: Noncredit [ ] Credit - Degree Applicable [X] Credit - Not Degree Applicable [ ]

GRADING POLICY: Pass/No Pass [ ] Standard Letter [X] Not Graded [ ] Satisfactory Progress [ ]

OPEN ENTRY/OPEN EXIT: Yes [ ] No [X]

TRANSFER STATUS: CSU Transferable[X] UC/CSU Transferable[ ] Not Transferable[ ]

LEVELS BELOW TRANSFER: Not Applicable

CALIFORNIA CLASSIFICATION CODES: Y - Not Applicable

NON CREDIT COURSE CATEGORY: Y - Not applicable, Credit Course

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [ ] NUMBER REPEATS:
REQUIRED FOR DEGREE OR CERTIFICATE: No [ ] Yes [X]
Liberal Arts: Emphasis in Mathematics(Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
   B4 - Mathematics/Quantitative Thinking

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

1. use trigonometric identities to simplify or evaluate trigonometric expressions.
2. graph functions of the type $y = A \text{ trig} (Bx+C) + D$.
3. Solve trigonometric equations.

COURSE OBJECTIVES:
1. define the six trigonometric and circular functions.
2. evaluate function values of special angles given in both degree and radian measures without the use of tables or calculators.
3. evaluate function values of any angle.
4. solve right and oblique triangles and use such techniques to solve applied problems.
5. prove identities and use them to simplify or evaluate trigonometric expressions.
6. graph functions of the type $y = A \text{ trig} (Bx+C) + D$.
7. define, graph and evaluate inverse trigonometric functions.
8. perform basic operations of geometric and algebraic vectors and use vectors to solve applied problems.
9. perform basic operations of complex numbers in both standard and trigonometric form and find their n-th roots.
10. graph equations in polar and parametric form.
11. use the calculator in conjunction with the objectives stated above.
12. Convert between polar and rectangular coordinates and equations.

COURSE CONTENT:

LECTURE CONTENT:

A. Preliminary concepts
   1. Sets
   2. Angles
   3. Radian and degree measure

B. Basics trigonometric functions
   1. Definitions
   2. Functions values for special angles
   3. Function values for all angles

C. Circular functions
   1. Definitions
   2. Function values
   3. Arclength and area of a sector
   4. Uniform circular motion

D. Solving triangles
   1. Right triangles
3. Applications

E. Graphing trigonometric functions
   1. Basic graphs
   2. Graphing \( y = A \, \text{trig} \, (Bx+C) + D \)
   3. Finding the equation from graph

F. Identities
   1. Basic ratio and Pythagorean identities
   2. Sum and difference identities
   3. Double-angle and half-angle identities
   4. Proving identities

G. Conditional Equations
   1. Basic
   2. Using identities
   3. Multiple angle
   4. Applications

H. Inverse trigonometric functions
   1. Definitions, domains and ranges
   2. Function values
   3. Graphs

I. Vectors
   1. Geometric approach
   2. Algebraic approach
   3. Applications

J. Complex numbers
   1. Basic operations
   2. Trigonometric form
   3. DeMoivre’s Theorem
   4. Finding n-th roots

K. Polar coordinates
   1. Conversion from rectangular to polar and vice versa
   2. Graphing

L. Parametric equations
   1. Eliminating the parameter
   2. Graphing
   3. Applications

METHODS OF INSTRUCTION:

A. Lecture:
B. Tutoring – noncredit:
C. Dist. Ed – Delayed Interaction:
D. Online:
E. Independent Study:
F. Hybrid:

INSTRUCTIONAL TECHNIQUES:

COURSE ASSIGNMENTS:
Reading Assignments

A. Required Reading such as:
   
   Course textbook which provides explanations, worked examples, and problems to be solved.
Out-of-class Assignments
Computer assignments may be required. These will consist of individual laboratory assignments designed to further illustrate concepts presented in the lecture.

Writing Assignments
Homework, quizzes, and examinations covering topics presented in the course.

METHODS OF STUDENT EVALUATION:
Midterm Exam
Final Exam
Short Quizzes
Written Assignments
Essay Examinations
Objective Examinations
Report
Projects (ind/group)
Problem Solving Exercises
Oral Presentations

Demonstration of Critical Thinking:
Analysis and application of mathematical techniques presented in the course; mathematical modeling and computational methods.

Required Writing, Problem Solving, Skills Demonstration:
Homework, quizzes, and examinations covering topics presented in the course.

TEXTS, READINGS, AND RESOURCES:
TextBooks:
1. Lial, Hornsby, Schneider, Daniels. Trigonometry, 11th ed. Pearson, 2017
2. Abramson, Jay. Algebra and Trigonometry, 1 ed. OpenStax (OER), 2015

Other:
1. Scientific calculator required.

LIBRARY:
Adequate library resources include:

Comments:

Attachments:
Attached Files