COURSE OUTLINE OF RECORD

Number: MATH G170
TITLE: Precalculus

ORIGINATOR: Gary Kirby Jr.
EFF TERM: Fall 2018
FORMERLY KNOWN AS:
DATE OF OUTLINE/REVIEW: 04-18-2018
CROSS LISTED COURSE:
TOP NO: 1701.00
CID:

SEMESTER UNITS: 5.0
HRS LEC: 90.0       HRS LAB: 0.0       HRS OTHER: 0.0
CONTACT HRS TOTAL: 90.0
STUDY NON-CONTACT HRS RECOMMENDED: 180.0

CATALOG DESCRIPTION:
This course will cover topics required for studying calculus. Particular emphasis will be placed on the analysis of polynomial, rational, exponential, logarithmic, trigonometric and inverse functions. Other topics include vectors, analytic geometry, linear systems, matrices, elementary theory of equations, polar coordinates, sequences, series, and complex numbers. This course is essential for those students planning to study Mathematics G180 (Calculus 1). UC Credit Limitations: Math G115 and G170 combined—maximum credit, one course. Math G170 (maximum credit, 4 units.)

JUSTIFICATION FOR COURSE:

PREREQUISITES:
- GWC Math Placement Level of 70 or higher.
- MATH G120: Trigonometry with a minimum grade of C or better
  or
- OCC Math Placement Level of 60 or higher.
  or
- MATH A120: Trigonometry with a minimum grade of C or better
  or
- CCC Math Placement Level of 80 or higher.
  or
- MATH C120: Trigonometry with a minimum grade of C or better
  or

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[ ]  UC/CSU Transferable[X]  Not Transferable[X]

BASIC SKILLS STATUS: Yes [ ] No [X]  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]
General Biology (Associate in Arts)
Liberal Arts: Emphasis in Mathematics (Associate in Arts)

GE AND TRANSFER REQUIREMENTS MET:
IGETC Area 2: Mathematical Concepts and Quantitative Reasoning
   2A: Mathematics
CSU GE Area B: Scientific Inquiry and Quantitative Reasoning
   B4 - Mathematics/Quantitative Thinking

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

1. Solve trigonometric equations over the set of real numbers.
2. Solve logarithmic and exponential equations.
3. Solve polynomial and rational inequalities.
4. Convert from rectangular to polar or from polar to rectangular coordinates and graph

COURSE OBJECTIVES:
1. Demonstrate knowledge of algebra and trigonometry required for success in Calculus I (Math 180).
2. Graph equations and functions: polynomial, rational, exponential, logarithmic, trigonometric, and conic sections.
3. Solve systems of equations and inequalities.
4. Solve logarithmic and exponential equations.
5. Demonstrate knowledge of the principles of polar coordinates, polar equations and parametric equations.
6. Find the terms of a sequence, add the terms of arithmetic and geometric sequences and find the limit of a geometric series.

COURSE CONTENT:

LECTURE CONTENT:

A. Functions and their graphs
   1. Functions
   2. Graphs of Functions
   3. Properties of Functions
   4. Library of Functions and Piecewise-defined Functions
   5. Graphing using Transformations

B. Polynomial and Rational Functions
   1. Polynomial Functions and their Graphs
   2. Rational Functions and their Graphs
   3. Polynomial and Rational Inequalities
   4. Zeros of a Polynomial

C. Exponential and Logarithmic Functions
   1. Composite Functions
   2. Inverse Functions
   3. Exponential Functions
   4. Logarithmic Functions
   5. Logarithmic and Exponential Equations
D. Trigonometric Functions
1. Angles and Their Measure
2. Trigonometric Functions on the Unit Circle
3. Properties of Trigonometric Functions
4. Graphs of Trigonometric Functions

E. Analytic Trigonometry
1. Inverse Trigonometric Functions
2. Trigonometric Identities
3. Sum and Difference Formulas
4. Double-angle and Half-angle Formulas
5. Sum-to-Product and Product-to-Sum Formulas
6. Trigonometric Equations

F. Applications of Trigonometric Functions
1. Right Triangle Trigonometry
2. Law of Sines
3. Law of Cosines
4. Area of a Triangle

G. Polar Coordinates and Vectors
1. Polar Coordinates
2. Polar Equations and Graphs

H. Conic Sections and Plane Curves
1. The Parabola
2. The Ellipse
3. The Hyperbola
4. Plane Curves and Parametric Equations

I. Systems of Equations and Inequalities
1. Substitution and Elimination
2. Partial Fraction Decomposition
3. Systems of Inequalities

J. Sequences and Series
1. Sequences
2. Arithmetic Sequences and Series
3. Geometric Sequences and Series

METHODS OF INSTRUCTION:
A. Lecture:
B. Tutoring – noncredit:
C. Work Experience:
D. Direct Study/IS:
E. Dist. Ed – Delayed Interaction:
F. Video One Way – Audio Two Way:
G. Two-way interactive audio only:
H. Other simultaneous interactive:
I. Audio – One Way:
J. Other passive medium:
K. Independent Study:

INSTRUCTIONAL TECHNIQUES:
COURSE ASSIGNMENTS:
   Reading Assignments
   A. Required Reading such as:
      Precalculus textbook.

   Out-of-class Assignments

Writing Assignments
Students will be required to write their own solutions to regular homework exercises, test questions and quizzes. To be successful, these papers must demonstrate clarity, mathematical modeling, and problem solving skills.

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:
Students will demonstrate critical thinking and problem solving skills by completing hand written homework assignments consisting of appropriate exercises, participating in classroom discussions, and taking required tests and quizzes.

   Required Writing, Problem Solving, Skills Demonstration:
Students will be required to write their own solutions to regular homework exercises, test questions and quizzes. To be successful, these papers must demonstrate clarity, mathematical modeling, and problem solving skills.

TEXTS, READINGS, AND RESOURCES:
   TextBooks:

LIBRARY:
   Adequate library resources include:

Comments:

Attachments:
   Attached Files