ROCHESTER COMMUNITY AND TECHNICAL COLLEGE COMMON COURSE OUTLINE

Course discipline/number/title: MATH 1117: Precalculus

A. CATALOG DESCRIPTION
1. Credits: 4
2. Hours/Week: 4
3. Prerequisites (Course discipline/number): MATH 1115 or concurrent enrollment in MATH 1115 with instructor permission.
4. Other requirements: None
5. MnTC Goals (if any): Goal 4/Mathematics/Logical Reasoning

B. COURSE DESCRIPTION: This is a college level Math course. Topics include trigonometric functions and their inverses, trigonometric identities and equations, applications of trigonometry, conic sections, sequences, series, and a review of algebra topics as needed. College level reading skills as demonstrated by completion of READ 0900 or equivalent placement score.

C. DATE LAST REVISED (Month, year). February, 2021

D. OUTLINE OF MAJOR CONTENT AREAS.
1. Trigonometric Functions and Inverse Trigonometric Functions
2. Trigonometric Identities and Trigonometric Equations
3. Right Angle Trigonometry and Circular Trigonometry
4. Vectors
5. Conics
6. Sequences and Series

E. LEARNING OUTCOMES (GENERAL). The student will be able to:
1. Trigonometry
   a) Define the trigonometric functions using the unit circle and right triangle.
   b) Graph the trigonometric functions and their transformations.
   c) Identify the domain and range of the six trigonometric functions and their inverses.
   d) Evaluate trigonometric functions, inverse trigonometric functions, and their compositions.
   e) Use basic trigonometric identities to simplify trigonometric expressions and verify trigonometric identities.
   f) Apply trigonometric identities to solve trigonometric equations.
   g) Solve right and non-right triangles.
   h) Use the trigonometric form of complex numbers to find products, quotients, powers, and nth roots.
   i) Convert coordinates and equations between rectangular form, polar form, and parametric form.
2. Vectors
   a) Convert vectors between component and linear form.
   b) Perform vector operations algebraically and graphically.
   c) Find the angle between two vectors.
3. Conics
   a) Recognize and write the equations of the parabola, ellipse, hyperbola, and circle.
   b) Graph parabola, ellipse, hyperbola, and circle by hand.
4. Sequences and Series
   a) Recognize geometric and arithmetic sequences and series.
   b) Determine the terms of geometric and arithmetic sequences and the value of geometric and arithmetic series.
   c) Find the sum of a series written using summation notation.

F. LEARNING OUTCOMES (MNTC).
Goal 4/Mathematics/Symbolic Systems: The student will be able to:
1. Illustrate historical and contemporary applications of mathematics/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument (proof).
4. Apply higher-order problem solving and/or modeling strategies.

G. METHODS FOR EVALUATION OF STUDENT LEARNING. Methods may include but are not limited to:
1. Tests and Comprehensive Final Exam
2. Quizzes
3. Homework
4. Group assignments or projects

H. RCTC CORE OUTCOME(S).
Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I. SPECIAL INFORMATION (if any):
1. A graphing calculator is a requirement for each student