COMMON COURSE OUTLINE

ROCHESTER COMMUNITY AND TECHNICAL COLLEGE

Course discipline/number/title: MATH 1119: Applied Calculus

A.   CATALOG DESCRIPTION
1. Credits: 3
2. Hours/Week: 3
3. Prerequisites (Course discipline/number): MATH 1113 or MATH 1115 or MATH 1117
4. Other requirements: None
5. MnTC Goals (if any): Goal 4/Mathematics/Logical Reasoning

B.   COURSE DESCRIPTION: This course is a college level introductory calculus course with an emphasis on applications. Topics include but are not limited to: limits, derivatives, continuity, first and second derivative test for relative extreme, applications of absolute max/min, integration, and continuous money flow. 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. Algebra Review
2. Math modeling with regression
3. Limits and Continuity
4. Differentiation
5. Applications of derivatives
6. Exponential growth and decay
7. Integration
8. Applications of Business and Economics

E.   LEARNING OUTCOMES (GENERAL): The student will be able to:
1. Find a unique polynomial, given points.
2. Find an equation of best fit using regression.
3. Find points of discontinuity and evaluate the limit of functions.
4. Find the equation of the tangent line to a variety of functions at a given point.
5. Find relative extrema, inflection points, and intervals of increasing/decreasing for a given polynomial function.
6. Find relative extrema, asymptotes, intercepts and graphs of rational, exponential and logarithmic functions.
7. Find the definite integral of polynomial, rational, exponential, and logarithmic functions.
8. Find the area bounded by curves.
9. Find the marginal cost, revenue, and profit functions.
10. Find the point of diminishing returns.
11. Find the present and/or future value given continuous money flow.
12. Find the doubling time and/or half-life given a rate of growth and/or decay.

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
2. Quizzes
3. Homework
4. Group assignments

H.	RCTC CORE OUTCOME(S). This course contributes to meeting the following 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): None