MASTER COURSE OUTLINE
Prepared By: Date: November 2, 2018

COURSE TITLE
Calculus I

GENERAL COURSE INFORMATION

Dept.: MATH&	Course Num: 151	(Formerly: MATH 171)
CIP Code: 27.0103	Intent Code: 11	Program Code:
Credits: 5		
Total Contact Hrs Per Qtr.: 55		
Lecture Hrs: 55	Lab Hrs: 0	Other Hrs: 0

Distribution Designation: Math Science MS, Symbolic or Quantitative Reasoning SQR

COURSE DESCRIPTION (as it will appear in the catalog)
This course will introduce the student to the basic concepts of the calculus. It will give the student an appreciation of the calculus and its applications in the real world and will prepare the student for future work in mathematics and the sciences. Course includes functions, limits, continuity, derivatives and their applications, and integration and its applications.

PREREQUISITES
MATH& 141 & MATH& 142 or BBCC placement exam or instructor permission

TEXTBOOK GUIDELINES
Appropriate college level text as chosen by instructor.

COURSE LEARNING OUTCOMES
Upon successful completion of the course, students should be able to demonstrate the following knowledge or skills:
1. Calculate and derive limits of functions
2. Calculate derivatives of functions
3. Use derivatives to model and optimize situation of change

INSTITUTIONAL OUTCOMES
IO2 Quantitative Reasoning: Students will be able to reason mathematically.

COURSE CONTENT OUTLINE
1. Limits of Function Values
2. Limits Involving Infinity
3. Continuous Functions
4. Defining Limits Formally with Epsilons and Deltas
5. Slopes, Tangent Lines, and Derivatives
6. Differentiation Rules
7. Velocity, Speed, and Other Rates of Change

8. Derivatives of Trigonometric Functions
9. The Chain Rule
10. Implicit Differentiation
11. Derivatives with Rational Exponents
12. Differentials and Linearizations
13. Newton's Method
14. Related Rates of Change
15. Extreme Values of Functions
16. How y' and y" Determine the Shape of a Graph
17. Using the Calculus to Graph Functions
18. Optimization
19. The Mean Value Theorem
20. Introduction to Partial Derivatives and Simple Applications

DEPARTMENTAL GUIDELINES *(optional)*

In order to give the instructor the greatest flexibility in assigning a grade for the course, grades will be based on various instruments at the instructor's discretion. However, to maintain instructional integrity there must be four class exams or three class exams and a project. A final exam will be given if there are less than four exams or a project may be substituted for the final exam if there are four in-class exams. At least 60% of the grade will be based on quantifiable work (exams, homework, quizzes, etc.). The remaining portion of the grade may be based on quantifiable work, attendance, projects, journal work, etc., at the instructor's discretion.

The following is a compilation of acceptable grading instruments: In class exams and a final, attendance, homework or quizzes, research paper, modeling projects on the calculator or computer. Other projects or assignments may be assigned as deemed appropriate at the instructor's discretion.

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DIVISION CHAIR APPROVAL **DATE**