Middlesex County College
Edison, New Jersey

Mathematics Department

Date: July 14, 2009

Course Title: Analytic Geometry & Calculus I

Course No.: MAT 131

Class Hours: 4 per week   **Laboratory Hours:** 0   **Credit Hours:** 4

Department Head Approval: _____
                                Maria DeLucia, Ph.D.

Dean Approval: _____
                    Reginald Luke, Ph.D.

Prerequisite: MAT 129A/129B or MAT 129 - Precalculus, or appropriate score on the college placement test.

Textbook of Course:

    Author: Larson/Edwards
    Title: Calculus of a Single Variable, 9th Edition
    Publisher: Brooks/Cole, Cengage Learning

Catalog Course Description:

Presents fundamental ideas of calculus including the derivative, integral, and their applications. Topics include fundamentals of analytic geometry and transcendental functions. The first course in a sequence of calculus courses intended for the student interested in mathematics, engineering, and the natural, physical and social sciences. *TI 83 or TI 84 calculator required.*

Objectives of Course:

1. Deal with abstract symbols, comprehend their use, and manipulate them in a variety of situations.

2. Develop strong conceptual foundations.

3. Analyze mathematical situations with ideas and problem solving techniques.

4. Develop ability to make decisions about complex problems.

5. Establish underlying mathematical models for conceptual understanding.

Day-by-Day Outline

1.	Review – Chapter P.1 – P.3 Graphs and Models, Linear Models and Rates of Change, Functions and Their Graphs	15.	Catch up & review
2.	1.1 A Preview of Calculus (Quickly) 1.2 Finding Limits Graphically and Numerically 1.3 Evaluating Limits Analytically	16.	Test 2
3.	1.4 Continuity and One-Sided Limits 1.5 Infinite Limits	17.	4.1 Antiderivatives and Indefinite Integration
4.	2.1 The Derivative and the Tangent Line Problem	18.	4.2 Area
5.	2.2 Basic Differentiation Rules and Rates of Change 2.3 The Product and Quotient rules and Higher-Order Derivatives	19.	4.3 Reimann Sums and Definite Integrals 4.4 The Fundamental Theorem of Calculus
6.	2.4 The Chain Rule	20.	4.5 Integration by Substitution
7.	2.5 Implicit Differentiation 2.6 Related Rates	21.	5.1 The Natural Logarithmic Function: Differentiation 5.2 The Natural Logarithmic Function: Integration
8.	Catch up & review	22.	5.3 Inverse Functions 5.4 Exponential Functions: Differentiation and Integration 5.5 Bases Other Than e and Applications
9.	Test 1	23.	6.2 Differential Equations: Growth and Decay 6.3 Differential Equations: Separation of Variables
10.	3.1 Extrema on an Interval 3.2 Rolle's Theorem and the Mean Value Theorem	24.	4.6 Numerical Integration Review
11.	3.3 Increasing and Decreasing functions and the First Derivative Test 3.4 Concavity and the Second Derivative Test	25.	Test 3
12.	3.5 Limits at Infinity 3.6 A Summary of curve Sketching	26.	7.1 Area of a Region Between Two Curves
13.	3.7 Optimization Problems	27.	Catch up & review
14.	3.9 Differentials	28.	Review for Final Exam

BASED ON TWO WEEK CLASS MEETINGS PER WEEK