COURSE NUMBER/TITLE: MATH-156 [355-156] Calculus & Analytic Geometry I

CREDITS: 5

COURSE DESCRIPTION: Review of real numbers, inequalities, absolute values, intervals and continuity; analytic geometry of the plane, limit concepts, derivatives of algebraic functions, definite integral. Not open to those with credit in MATH-153, MATH-154 or MATH-157. Prerequisite: Demonstrated proficiency or MATH-121.

TEXTBOOK: Calculus: Early Transcendentals, Single Variable, 2nd Ed., by Rogawski (adopted Fall 2013)
Previous:
Single Variable Calculus - Early Transcendentals, 6th Ed., by Stewart (adopted F07)
Calculus Early Transcendentals, 5th Ed., by Stewart (adopted F03)
Calculus Early Transcendentals, 4th Ed., by Stewart (adopted F00)
Calculus For Graphical, Numerical & Symbolic Points of View, Vol. I, by Ostebee (adopted F96)
Calculus and Analytic Geometry, by Thomas (previous)

COURSE OBJECTIVES:
1. To help the student see calculus and analytic geometry in its role in the development of mathematics.
2. To help the student see the logical development of calculus and analytic geometry.
3. To help the student see the relationship between calculus and analytic geometry with the technical fields and its application to these fields.
4. To help the student develop a logical manner of thinking.
5. To develop understanding of the various topics of calculus or skills with use of calculus.
6. To prepare students for advanced work in mathematics.

COURSE OUTLINE:
1. Functions and Their Graphs
2. Theory of Limits and Continuity
3. Differentiation and Applications including the Geometric Representation, Chain Rule, Implicit Differentiation, and the Higher Derivatives
   a) Including Trigonometric, Inverse, Logarithmic and Exponential Functions
4. Theory of the Definite Integral (Geometric Motivation, Fundamental Theorem of Calculus, and Antidifferentiation)
5. Elementary Integration Formulae and Change of Variable Technique
6. Some Applications of the Definite Integral