

SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE  
 SYLLABUS (*Tentative*)  
 MATH 160 *Introduction to Applied Calculus*

**Objective:** To develop students' problem solving skills using the techniques of calculus through numeric, analytic, graphical, and symbolic approaches.

**Intended for:** Students other than mathematics, physics, and chemistry majors who are interested in applications of math to their majors.

**Prerequisite:** High School Algebra II and plane geometry.

**Resources:** “Applied Calculus for the Managerial, Life, and Social Sciences: A Brief Approach,” by Tan; Brooks/Cole, Cengage Learning, 8<sup>th</sup> edition, 2009. Graphing calculator or mathematical software (accessible via SU computer network.)

<i>Topics</i>	<i>Hours</i>
<b><i>Functions</i></b>	<b>8</b>
Definition of Function and Model; linear and quadratic functions and applications; exponential and logarithmic functions and applications including growth, decay, and compound interest; power functions; polynomials; combinations of functions; logistic functions.	
<b><i>Differentiation</i></b>	<b>7</b>
Rate of change and slope, derivatives, interpretations of the derivative, second derivative, marginal analysis.	
<b><i>Rules for the Derivative</i></b>	<b>7</b>
Derivative formulas for: power functions and polynomials, exponential and logarithmic functions, the chain rule, products, quotients, and compositions of functions. Applications.	
<b><i>Applications of the Derivative</i></b>	<b>7</b>
The use of the first and second derivative in curve sketching and in the qualitative study of curves; optimization and related applications.	
<b><i>Anti-Derivatives &amp; Definite Integrals</i></b>	<b>5</b>
Finding anti-derivatives and the substitution method, measuring distance traveled, integrals, area, average value, interpretations of the integral, evaluating integrals using the Fundamental Theorem of Calculus.	
<b><i>Applications of the Definite Integral</i></b>	<b>4</b>
Applications to life sciences, economics, and distribution functions.	
<b><i>Tests, review or optional topics</i></b>	<b><u>4</u></b>
	<b>42</b>

**EVALUATION**

Homework and quizzes	25% - 35%
Tests	50%
Final	15% - 25%

*Free tutoring is available for this course in the Spring and Fall semesters.*

NOTE: ONCE A STUDENT HAS RECEIVED CREDIT, INCLUDING TRANSFER CREDIT, FOR A COURSE, CREDIT MAY NOT BE RECEIVED FOR ANY COURSE WITH MATERIAL THAT IS EQUIVALENT TO IT OR IS A PREREQUISITE FOR IT.