

Minnesota State College Southeast

MATH 1440: Applied Calculus

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 3

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:

This course requires any of these four prerequisites

MATH 1220 - College Algebra

MATH 1225 - Pre-Calculus

MATH 2520 - College Algebra

MATH 2525 - Pre-Calculus

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

Applied Calculus is intended for use as an introductory and applied calculus course for students in managerial, life, and social sciences. The course will introduce the fundamentals of calculus as well as calculus concepts with a problem solving approach grounded in real life applications. (MnTC Goal 4) (Prerequisite: MATH 1220 College Algebra or MATH 1225 Pre-Calculus) (3 credits: 3 lecture/0 lab)

B. COURSE EFFECTIVE DATES: 05/18/2016 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Preliminaries; PreCalculus Review, What is Calculus, How is Calculus Applied
2. Functions, Limits and the Derivative
3. Differentiation; Applications of the Derivative
4. Exponential and Logarithmic Functions; Exponential Growth and Decay
5. Integration
6. Marginal Revenue, Marginal Cost, Marginal Profit; Other Managerial, Life Science, and Social Science Applications

D. LEARNING OUTCOMES (General)

1. Compute derivatives of basic functions using the limit definition of the derivative
2. Calculate derivatives of functions using the common rules; power, product, quotient, and chain rule; and be able to calculate the derivatives of polynomials
3. Use implicit differentiation and logarithmic differentiation
4. Calculate antiderivatives for basic functions
5. Evaluate definite integrals of basic functions
6. Solve problems in a range of mathematical applications using the derivative or the integral
7. Analyze functions and their graphs as informed by limits and derivatives
8. Evaluate exponential, logarithmic functions and derivatives

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/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.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

None noted