North Hennepin Community College

MATH 1200: Calculus Survey

A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: *.*

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:
This course requires any of these three prerequisite categories
1. MATH 1150 - College Algebra (Minimum grade: 1.67 GPA Equivalent)
   Or
2. MATH 1170 - Pre-Calculus (Minimum grade: 1.67 GPA Equivalent)
   Or
3. A score of 79 on test Accuplacer College Level Math

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course in differential and integral calculus is designed for those students who require only one semester of calculus. The emphasis is on methods and applications of calculus rather than on theory, with the applications primarily from business. Students who wish to take more than one semester of calculus should enroll in Math 1221.
Prerequisites: College math placement level or successful completion of Math 1150 or Math 1180 with grade of "C" or better

B. COURSE EFFECTIVE DATES: 08/27/1997 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Limits
2. Derivatives and methods for finding derivatives
3. Applications of derivatives
4. Integrals and methods of integration
5. Applications of integration
6. Calculus of exponential and logarithmic functions
7. Some multivariable topics, such as partial derivatives and finding local extrema

D. LEARNING OUTCOMES (General)

1. Evaluate limits of functions from their equations and/or graphs (MnTC Goal 4: a,b,d; Goal 2 a); (NHCC ELO 1, 2)
2. Analyze and apply the notions of continuity and differentiability to algebraic functions (G4: a, b, d; G2: a, b); (NHCC ELO 1, 2)
3. Determine derivatives for functions involving powers, exponentials, logarithms and combinations of these functions and solve business and economic applications using derivatives (G4: a, b); (NHCC ELO 1, 2, 4)
4. Use derivatives to analyze and interpret graphs of functions (G4: a, b, d; G2: a, b, c); (NHCC ELO 1, 2)
5. Use basic integration techniques to solve simple differential equations (G4: a, b; G2: a) (NHCC ELO 1, 2)
6. Demonstrate the connection between area and the definite integral (G4: a, b; G2: c); (NHCC ELO 1, 2, 4)
7. Integrate selected functions and solve business and economic applications using these results (G4: a, b, d); (NHCC ELO 1, 2, 4)
8. Apply the Fundamental Theorem of Calculus to evaluate definite integrals (G4: a, b, d; G2: a, c) (NHCC ELO 1, 2)
9. Apply the concepts of limits, derivatives, and integrals to solve problems involving functions unique to business applications and interpret these concepts graphically (G4: a, b, d; G2: a, b, c, d) (NHCC ELO 1, 2, 4)

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. Apply higher-order problem-solving and/or modeling strategies.

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus

G. SPECIAL INFORMATION

1. Knowledge of Human Cultures and the Physical and Natural World--Through study in the sciences, mathematics, social sciences, humanities, histories, languages, the arts, technology and professions.

2. Intellectual and Practical Skills--Including: Inquiry and analysis; Critical and creative thinking; Written and oral communication; Quantitative literacy; Information literacy; Teamwork and problem solving.

4. Integrative and Applied Learning--Including: Synthesis and advanced accomplishment across general education, liberal studies, specialized studies and activities in the broader campus community.