

North Hennepin Community College

MATH 1221: Calculus I

A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: *.*

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:

This course requires any of these five prerequisites

A score of 91 on test Accuplacer College Level Math

A score of 26 on test ACT Math

A score of 590 on test SAT Math Composite

MATH 1170 - Pre-Calculus (Minimum grade: 1.67 GPA Equivalent)

MATH 1180 - College Algebra and Pre-Calculus (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course is a thorough treatment of differentiation and an introduction to integration. Topics include the definition of derivative, limits and continuity, differentiation, applications of the derivative, definite and indefinite integrals, the Fundamental Theorem of Calculus, techniques of integration, and applications of integration.

Prerequisites: College math placement level or successful completion of Math 1170 or Math 1180 with grade of "C" or better

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

C. OUTLINE OF MAJOR CONTENT AREAS

1. See Course Description and Course Outcomes
2. See Course Description and Course Outcomes

D. LEARNING OUTCOMES (General)

1. Evaluate limits (MnTC Goal 4: a, b, c); (NHCC ELO 1, 2)
2. Explain the concept of limit from a graphical, numerical, and algebraic point of view. Be able to illustrate and calculate limits of a variety of algebraic and transcendental functions, and limits involving infinity. (MnTC Goal 4: a, b) (NHCC ELO 1, 2);
3. Use the concept of limit in discussion of continuity and evaluation of derivatives (G4: a, b, c, d; Goal 2: a, b, c); (NHCC ELO 1, 2)
4. Use techniques of differentiation to solve applied problems (G4: a, b, c, d; G2: a, b, c); (NHCC ELO 1, 2, 4)
5. Use the Fundamental Theorem of Calculus to evaluate definite integrals (G4: a, b, c, d; G2: c); (NHCC ELO 1, 2)
6. Demonstrate understanding of the relationship between differentiation and integration (Fundamental Theorem of Calculus) (G4, a, b, c; G2: c) (NHCC ELO 1, 2, 4)
7. Recognize limits in indeterminate forms (quotient, product, difference, power) and apply L'Hospital's Rule appropriately to evaluate them. (G4: a, b, d) (NHCC ELO 2);

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

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.