North Hennepin Community College

MATH 1222: Calculus II

A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: *.*

Lab Hours/Week: *.*

OJT Hours/Week: *.*

Prerequisites:
This course requires the following prerequisite
MATH 1221 - Calculus I (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course continues the study of the definite and indefinite integrals and leads to a study of improper integrals and infinite series. Topics include advanced techniques of anti-differentiation, numerical integration techniques and error bounding, applications of the integral, improper integrals, an introduction to differential equations, infinite series, parametric equations, and polar coordinates.
Prerequisites: Successful completion of Math 1221 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

D. LEARNING OUTCOMES (General)

1. Perform advanced techniques of integration including integration by parts, trigonometric integrals, trigonometric substitution, and partial fractions (MnTC Goal 4: a, b, d; Goal 2: a, b, c); NHCC ELOs 1, 2
2. Apply LHopitals Rule to evaluate limits (G4: a, b, d); NHCC ELOs 1, 2
3. Evaluate improper integrals (G4: a, b, d; G2: a, b); NHCC ELOs 1, 2
4. Determine the convergence and divergence of infinite series (G4: a, b, c, d; G2: a, b, d); NHCC ELOs 1, 2
5. Represent functions using power series, Taylor series, and Maclaurin series (G4: a, b, d; G2: a, b, c); NHCC ELOs 1, 2
6. Analyze and write equations of conics (G4: a, b, d; G2: a); NHCC ELOs 1, 2
7. Represent curves in parametric equations and use them to find arc lengths and areas of surfaces of revolution (G4: a, b, d; G2: a, b); NHCC ELOs 1, 2
8. Use the polar coordinate system to represent equations, find arc lengths, and find areas (G4: a, b, d; G2: a, b); NHCC ELOs 1, 2
9. Use and analyze two-dimensional and three-dimensional vectors in space to solve application problems (G4: a, b, d; G2: a). NHCC ELOs 1, 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.