

# North Hennepin Community College

## MATH 2220: Calculus III

### A. COURSE DESCRIPTION

Credits: 5

Lecture Hours/Week: \*.\*

Lab Hours/Week: \*.\*

OJT Hours/Week: \*.\*

Prerequisites:

This course requires the following prerequisite

MATH 1222 - Calculus II (Minimum grade: 1.67 GPA Equivalent)

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

Topics in this course include solid analytic geometry, vectors in space, scalar and vector products, vector functions and derivatives/integrals, multi-variable functions, partial derivatives, alternative coordinate systems, and double and triple integrals. The geometry of space curves, line and surface integrals, curl and gradient divergence, and Stokes' theorem are also included. Emphasis will be on learning relevant mathematical methods.

Prerequisites: Successful completion of Math 1222 with a 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. Interpret graphs of multivariable functions (MnTC Goal 4: a, b, d; Goal 2: a, c); (NHCC ELOs 1, 2)
2. Differentiate and integrate multivariate functions, including appropriate applications (G4: a, b, d; G2: a, b, c); (NHCC ELOs 1, 2)
3. Identify and apply basic properties of vectors (G4: a, b; G2: a); (NHCC ELOs 1, 2)
4. Use vector-valued functions to give a mathematical description of motion in space (G4: a, b, d; G2: a, b); (NHCC ELOs 1, 2)
5. Interpret parametric equations of curves in two and three dimensions (G4: a, b, d; G2: a, b); (NHCC ELOs 1, 2)
6. Describe graphs of functions using polar, cylindrical, and spherical coordinate systems (G4: a, b; 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.