**Metropolitan State University**

**MATH 310 : Calculus III: Multivariable Calculus**

**A. Course Description**

Credits: 4

Prerequisites: MATH 211 Calculus II

Lab Hours/ Weeks: Corequisites: None

Lecture Hours/ Week :

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning , Goal LS - Upper Division Liberal Studies

This is a continuation of Math 211 Calculus II and covers calculus as it applies to functions of several variables. Topics include vectors and plane curves, partial differentiation, curves and vectors in space, multiple integrals, vector fields, line integrals, and Stokes' Theorem.

**B. Course Effective Dates:** 08/24/2002 - 08/14/2010 08/15/2010 - Present

**C. Outline of Major Content Areas:**

See Course Description for major content areas.

**D. Learning Outcomes (General)**

1. Demonstrate comprehension and capability to derive and to compute the calculus of vector fields, including a thorough understanding of Green's theorem, the divergence theorem, and Stokes' theorem.
2. Demonstrate comprehension and capability to derive and to compute the calculus with parametric curves, vectors, and vector functions.
3. Demonstrate comprehension and capability to derive and to compute the differential and integral calculus of multivariable functions in rectangular, polar, cylindrical, and spherical coordinates.

**E. Learning Outcomes (MN Transfer Curriculum)**

Goal 04 - Mathematical/Logical Reasoning

1. Apply higher-order problem-solving and/or modeling strategies.
2. Clearly express mathematical/logical ideas in writing.
3. Illustrate historical and contemporary applications of mathematical/logical systems.
4. Explain what constitutes a valid mathematical/logical argument(proof).

Goal LS - Upper Division Liberal Studies

None

**G. Special Information**

Note: Students whose prerequisites are not identified by the system would contact the Math and Statistics Department for an override at MATH@metrostate.edu. First day attendance required except by instructor permission.