MATH 251: Multivariable Calculus

This detailed course description provides information about course topics & content. It is not a course syllabus. Summer 2013 course syllabi are updated in the spring, and may not be available until summer classes begin.

Instructor Information

Instructor	Email	Course Format	Number of Credits
Kalman Nanes	knanes@umbc.edu	Lecture	4

General Information

Delivery Format

In-Person

Prerequisite /Co-requisite:

MATH 142 or MATH 152 (C or better for either)

Course Materials

Currently Used Materials

• Multivariable Calculus, James Stewart, 7th Edition

Course Objectives/Learning Outcomes:

In MATH 251, we see how single-variable calculus generalizes to higher dimensions. As we will see, some concepts generalize quite naturally and easily, while others become more complicated in higher dimensions. We will study vectors and curves in two- and three-dimensional space, as well as differentiation and integration of multi-variable functions.

Potential Topics Covered:

Three dimensional coordinate systems, vectors, dot and cross products, equations of lines and planes, calculus on vector-valued functions (including arc length and motion in 3-space), calculus on functions of several variables (including partial and directional derivatives, gradients, optimization, and Lagrange multipliers), double and triple integrals, cylindrical and spherical coordinates, vector fields, line and surface integrals, Green's Theorem, Stokes' Theorem, Divergence Theorem