Standards for Multivariable Calculus II
Math 273

This course introduces students to the theory, techniques, and applications of differentiation of the elementary functions.

Pre-Requisite Skills
Students will be able to
• Work with vectors and vector notation (displacement vectors, vector arithmetic including dot and cross products);
• Compute ordinary and partial derivatives, differentials, gradients, and directional derivatives;
• Set up and evaluate single definite integrals (using simple substitution methods and integration by parts).

Performance Skills
Students will be able to
• Set up and evaluate double and triple (iterated) integrals in rectangular, polar, spherical, and cylindrical coordinates;
• Express curves and surfaces parametrically;
• Plot simple vector fields;
• Set up and evaluate line integrals representing such quantities as arc length, mass, flow/work;
• Identify those line integrals (work) that are path independent;
• Set up and evaluate surface integrals representing such quantities as mass and flux;
• Compute divergence and curl of vector fields;
• State and use the Divergence and Stokes’ theorems.

Pedagogical Standards
Instructors should attempt to instill certain vital problem-solving and communication skills in their students. The Mathematics Department wishes all students who successfully complete this course to possess the following skills.
Students will be able to
• Apply appropriate technology to solve problems;
• Model phenomena mathematically;
• Work cooperatively with others;
• Read and understand complex mathematical problems;
• Describe the methods used to approach a problem;
• Express solutions in written and oral form.