

## 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.