



Division: Academic

Date: May 1993

A: I

Department: Math and Computer Sciences Math Sciences New Course

X _____
1979 _____

Revision of Course Information Form:

Dated: October

Math 321 Differential Calculus

Subject & Course No.

Descriptive Title

Semester Credit

F: Calendar Description:

Summary of Revision:

Sections C, T, I, IV, U, and

This course extends the theory of differential and

integrals to functions of several variables.

Topics include the study of vectors, quadric surfaces, vector functions, cylindrical and spherical

integrals, vector fields, line integrals and applications.

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as appropriate given a function and a rectangular region of integration and notation

multiple integrals over rectangular regions

general regions in rectangular or polar coordinate systems, showing the order of

conversion from rectangular to polar coordinates or vice versa

over general regions

conversion from orthogonal coordinates to cylindrical or spherical coordinates

and perform change of variables in a multiple integral given by a transformation

use the above integration techniques to find areas of regions, volumes of solids, or masses, about axes or normals, as well as to solve problems involving physical applications such as mass, electric charge, center of mass and moments of inertia

- sketch a vector field on R^2

- set up double or triple Riemann sums and convert these to multiple integral notation

- calculate iterated integrals and double integrals

- calculate double integrals over general regions, showing the order of integration if necessary

- convert a double integral from rectangular to polar coordinates or vice versa

- calculate triple integrals

- convert triple integrals from rectangular to cylindrical or spherical coordinates

- calculate the Jacobian of a transformation