



Mathematics 331

Multivariate Calculus

Systems of ordinary differential equations. Calculus of functions of several variables. Introduction to vector analysis, theorems of Green, Gauss and Stokes.

Course Hours: H(3-1T)

Prerequisite(s): [Mathematics 253](#) or 263 or [283](#) or [Applied Mathematics 219](#) and one of [Mathematics 211](#), [213](#) or 221.

Antirequisite(s): Credit for both [Mathematics 331](#) and either 353 or 381 or [Applied Mathematics 309](#) will not be allowed.

Notes: This course is not a member of the list of courses constituting the fields of Actuarial Science, Applied Mathematics, Pure Mathematics, or Statistics and cannot normally be substituted for [Mathematics 353](#) or [381](#) in degree programs in any of those fields.

Syllabus

Topics

Number of Hours

Systems of linear Ordinary Differential Equations

8

Functions of several variables, graphs and level curves, partial derivatives, differentiability and gradient, repeated partial derivatives
The chain rule, the tangent plane, directional derivatives, example of Partial Differential Equations

9

Double integrals, repeated integrals, polar coordinates, standard version of Green's theorem, line integrals

6

Triple integrals, cylindrical and spherical coordinates

7

Vector fields, Gauss Theorem, Stokes theorem

6

TOTAL HOURS

36
