APPLIED MATHEMATICS 309
"VECTOR CALCULUS FOR ENGINEERS"

Calendar Description: H(3-1.5T)
Functions of several variables, chain rule and differentials. Vector calculus, line, surface and volume integrals, Green's, Gauss' and Stokes' theorems. Students in this course will be required to complete a project using a computer algebra system.
Prerequisite: Applied Mathematics 219 or both Mathematics 253 or 283 plus Math 114.
Note: Credit for more than one of Applied Mathematics 309, Mathematics 353 and 331 will not be allowed.

Syllabus

Topics	Number of hours
Surfaces -- cartesian, cylindrical and spherical coordinates	3
Vector-valued functions, limits, derivatives, integrals, space curves, curvature, motion, tangential and normal components of acceleration, applications	6
Review of functions of several variables, differentials, partial derivatives, chain rule	4
Directional derivatives, tangent planes, extrema of functions of several variables, Lagrange multipliers, method of least squares, applications	6
Review of multiple integration	4
Vector fields, line integrals, independence of path, Green's theorem, surface integrals, divergence theorem, Stoke's theorem, applications	13
TOTAL HOURS	**36**

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