

## 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.

**Prerequisite:** Applied Mathematics 219.

**Note:** Credit for more than one of Applied Mathematics 309, Mathematics 353 and 331 will not be allowed.

### *Syllabus*

<u>Topics</u>	<u>Number of hours</u>
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
<b>TOTAL HOURS</b>	<b>36</b>

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