



## MATHEMATICS 381 "HONOURS CALCULUS III"

**Calendar Description: H(3-1T)**

Functions of several variables; differentiability, extrema. Implicit and inverse function theorems. Integration of functions of several variables; line integrals; surface integrals.

**Prerequisite:** Mathematics 283 or a grade of B+ or better in Mathematics 253 or Applied Mathematics 219 or equivalent; and Math 211 or 221.

### *Syllabus*

<u>Topics</u>	<u>Number of Hours</u>
Vectors and Euclidean space	3
Functions of several variables: Level curves and surfaces, limit and continuity	3
Differentiation: Differentiability, partial derivatives and the Chain Rule. Directional derivatives. Higher derivatives.	6
Applications: Tangent planes, Extrema. Lagrange multipliers	4
Inverse Function Theorem and Implicit Function Theorem. Differentiation, Implicit differentiation	4
Double and Triple integrals. Iterated integrals. Double integrals in polar coordinates. Triple integrals in cylindrical and spherical coordinates. Change of variables. Jacobians	6
Vector fields. Line integrals. Independence of path. Green's Theorem. Surface integrals. Curl and divergence. Divergence Theorem. Stokes' Theorem	10
<b>TOTAL HOURS</b>	<b>36</b>

\* \* \* \* \*