UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Mathematics 381	Honours Calculus III

Functions of several variables; differentiability, extrema. Implicit and inverse function theorems. Integration of functions of several variables; line integrals; surface integrals. Students will complete a project using a computer algebra system.
Course Hours: H(3-1T)
Prerequisite(s): Mathematics 283 or a grade of B+ or better in Mathematics 253 or Applied Mathematics 219; and one of Mathematics 211 or 213 or 221.
Antirequisite(s): Credit for Mathematics 381 and any one of Mathematics 331, 349, 353, and Applied Mathematics 309 will not be allowed.

Syllabus

Topics	**Number of Hours**
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
TOTAL HOURS	**36**

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Corequisite changed to prerequisite Fall 2009