UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Mathematics 177 Further Topics from Mathematics 277

(see Course Descriptions for the applicable academic year: http://www.ucalgary.ca/pubs/calendar/)

Syllabus

Topics	**Number of Hours**
Vector functions and differentiation, curves and parametrization	4
Review of Functions of several variables, partial differentiation, Chain Rule	2
Linear approximation, differentiability, differentials, gradient and directional derivative, implicit functions	5
Extreme values on restricted domains, Lagrange Multipliers.	5
TOTAL HOURS	**16**

JL:jt

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14.12.04 Effective: Spring 2015

Upon Successful Completion of the Course, Students will be able to:

1. Acknowledge the similarities between the operations of limits, continuity, derivatives and integrals on scalar functions and on vector functions.

2. Develop the skills of obtaining "user friendly" parametric representations for curves in two or three space.

3. Describe motion of a particle in two or three space.

4. Extend the definition of partial derivative to obtain partial derivatives in any direction.

5. Use differentials to approximates values of functions of several variables and analyze the size of error involved in the approximation

6. Test whether a given non-linear system of equations is solvable and compute relevant derivatives.

7. Set up Set up and solve **Optimization Problems** including problems in restricted regions as well as problems with multiple constraints.

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08:15:17 (course outcomes addded)
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