UNIVERSITY OF CALGARY

FACULTY OF SCIENCE
Department of Mathematics and Statistics

Applied Mathematics 425 Introduction to Optimization

Examples of optimization problems. Quadratic forms, minimum energy and distance. Least squares, generalized inverse. Location and classification of critical points. Variational treatment of eigenvalues. Lagrange multipliers. Linear programming.
Course Hours: H(3-1T)
Prerequisite(s): Mathematics 311; and Mathematics 353 or 381 or Applied Mathematics 309 or Mathematics 331.

Syllabus

Topics	**Number of Hours**
Unconstrained optimization: one variable, several variables	9
Convex optimization: convex sets and convex functions optimal conditions, geometric programming	4
Introductory numerical methods: one dimensional searches, Newton's method (in several variables), steepest descent	5
Practical numerical methods: conjugate gradient, quasi-newton	5
Least squares: least squares fit, minimum norm solutions	5
Linear programming: simplex method, primal-dual method	5
Constrained optimization: penalty methods, Lagrange multipliers	5
TOTAL	36

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2001:08:21
Prerequisite change made 2008:07:01
LPB:jml