MECH6318 - Engineering Optimization

MECH 6318 Engineering Optimization (3 semester credit hours) Basics of optimization theory, numerical algorithms, and applications in engineering. The course covers linear programming (simplex method) and nonlinear programming, as well as unconstrained methods (optimality conditions, descent algorithms and convergence theorems), and constrained minimization (Lagrange multipliers, Karush-Kuhn-Tucker conditions, active set, penalty and interior point methods). Non-gradient based optimization methods are briefly introduced. Applications in mechanical engineering design will be emphasized. Students will use Matlab’s Optimization Toolbox to obtain practical experience with the material. (3-0) Y