SYSM6305 - Optimization Theory and Practice

**SYSM 6305** Optimization Theory and Practice (3 semester credit hours) Basics of optimization theory, numerical algorithms, and applications. The course is divided into three main parts: linear programming (simplex method, duality theory), 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). Applications in engineering, operations, finance, statistics, etc. will be emphasized. Students will also use Matlab's optimization toolbox to obtain practical experience with the material. (3-0) Y