CSC 319: Operations Research (2 Units) Overview of the operation research Modeling approaches. Linear programming model; assumption of linear programming; Simplex method; Two-phase Method; Artificial Variable Technique; Minimization and maximization Two-Phase method. Transportation simplex method: tableau initialization, optimality test, and iteration; Assignment Problems: Formulation and Solution. Directed network; Shortest-path problem: Algorithm for minimum spanning tree problem; Maximum cost flow problem; Minimum cost flow problem; Network simplex method; Project planning and control with PERT-CPM. Deterministic Model; Continuous Review: Economic order quality model (EOQ); Periodic review: Production planning; Stochastic Models: Single Period model; Two-period inventory model; Multi-period model. One-dimensional Search: Golden section search derivations; series and conditions for local optima; Convex / Concave function and global optimality; Gradient search; 's method; Quasi-Network method and BFGS search. Lagrange multipliers method; Karush-Kuhu-Tucker optimality conditions; Penalty and barrier method.

Department of Computer and Information Sciences

Covenant University
1. CSC319
1.1. CSC 319: Operations Research (2 Units) Overview of the operation research Modeling approaches. Linear programming model; assumption of linear programming; Simplex method; Two-phase Method; Artificial Variable Technique; Minimization and maximization Two-Phase method. Transportation simplex method: tableau initialization, optimality test, and iteration; Assignment Problems: Formulation and Solution. Directed network; Shortest-path problem: Algorithm for minimum spanning tree problem; Maximum cost flow problem; Minimum cost flow problem; Network simplex method; Project planning and control with PERT-CPM. Deterministic Model; Continuous Review: Economic order quality model (EOQ); Periodic review: Production planning; Stochastic Models: Single Period model; Two-period inventory model; Multi-period model. One-dimensional Search: Golden section search derivations; series and conditions for local optima; Convex / Concave function and global optimality; Gradient search; ’s method; Quasi-Network method and BFGS search. Lagrange multipliers method; Karush-Kuhu-Tucker optimality conditions; Penalty and barrier method.