Operations Research (OR) Curriculum for Master Business Administration (MBA)

1. Formulation of the Problem. (One week)

2. Sensitivity Analysis and Dual Problem (Two weeks)
   2.1. Primal-Dual Relationships.
   2.2. Algebraic Sensitivity Analysis - Changes in the Right-hand side.
   2.3. Algebraic Sensitivity Analysis - Changes in Objective Function.
   2.4. Adding of a new variable (variables).
   2.5. Adding of a new constraint (constraints).

3. Dual Simplex Method. (One week)

4. The Transportation Problem (Two weeks)
   4.1. Formulating a Transport Problem as a Linear Programming Problem.
   4.2. Improvement of Solution/ Using Shadow Costs.
   4.4. The Dual of the Transportation Problem

5. Assignment Problems (Two weeks)
   5.1. Formulating Assignment problems as linear programming problems.
   5.2. The Hungarian Algorithm.
   5.3. Unbalanced Assignment Problems.
   5.4. Algorithm for Maximization Case.

6. Network Models (Three weeks)
   6.1. Scope and Definition of Network Models.
   6.2. Critical Path (CPM) Computations.
   6.3. Program Evaluation and Review Technique (PERT).
7. **Travelling Salesman Problem.** (مشكلة البائع المتجول)  ((One week))

8. **Statistical technic in Business Administration.** (الأساليب الإحصائية في إدارة الأعمال)  ((Three weeks))

8.1. Hypothesis Testing (اختبارات الفرضيات)

8.2. $\chi^2$- Test (اختبار مربع كاي)

8.3. F- Test.

8.4. Correlation and Simple Linear Regression (الارتباط والانحدار الخطي البسيط)

(1) The concept and types of correlation. (مفهوم الارتباط وأنواعه)

(2) Different ways to calculate the correlation coefficients. (طرق حساب معاملات الارتباط المختلفة)

(3) The concept of simple linear regression and applications. (مفهوم الانحدار الخطي البسيط وتطبيقاته)