Department of Statistics and Operations Research
College of Science - King Saud University

COURSE SYLLABUS

OPER 122 – INTRODUCTION TO OPERATIONS RESEARCH 3(2-0-1)

Elective Course: 2 hours lecture and one 2 hours tutorial per week

Course Instructor and/or Coordinator: Dr. Wael Al Hajailan
Email: whajailan@ksu.edu.sa
(Department of Statistics and Operations Research)
Office No. building 4

Course Description (catalog):
Operations research helps in solving problems in different environments that needs decisions. The course cover topics that include: Introduction to OR, Model Building, Linear programming, Graphical Method, Sensitivity Analysis, Simplex Method, Decision Analysis, Transportation Problem, Assignment Problem, Network Model, Markov Chain, and Queueing theory. At the end of this course students will be able to understand, formulate linear programming problems and applications.

Prerequisites: Familiarity with linear algebra is required.

Course Objectives:
We will develop modeling and analysis skills in deterministic optimization, focusing primarily on linear programming. At the end of the course, students will be able to:
1. Ability to formulate and solve optimization problems with logical constraints
2. Ability to formulate and solve a decision optimization problem
3. Mastery of the theory underlying the solution methods.

Textbook (required):
1) Taha, H. A. (2016). Operations Research: An Introduction, 10th edition, Prentice Hall.

Textbook (optional):
2) Hiller, F.S. and Lieberman, G.J. (2010). Introduction to Operations Research, 9th edition, McGraw-Hill.
3) Winston, W. L. (2003). Operations Research: Applications and Algorithms, 4th edition, Duxbury Press.

Tentative Course Content:

Major Topics covered and schedule in weeks	**# Weeks**
Introduction to Operations Research	1
Modeling Linear programming	1
Introduction to graphical method	2
Sensitivity Analysis	1
Midterm #1	
Introduction to the Simplex Method	2
Introduction to Decision Theory	1
Transportation Problems	1
Midterm #2	
Assignment Problems	1
Introduction to Network: the shortest path method and the minimum spanning tree	2
Introduction to Markov Chain	1
Introduction to Queuing Theory	1
Concluding remarks and Review	1
Total	15

Grading Policy:
Midterm 1 (30%), Midterm 2 (30%), Final (40%).
Important Dates:
Midterm #1 xxxxxxx
Midterm #2 xxxxxxx
Final Exam xxxxxxx

Class Attendance: On-time attendance to the class is mandatory. Attendance will be taken during the class to verify your attendance. Absences more than 25% will not allow you to attend the final exam.