

Al albayt University
Faculty of Finance and Business Administration
Department of Business Administration
Course: Operations research (502453) Instructor: Dr. Bahjat Al-jawazneh
First Semester: 2015-2016 Lecture Schedule: Sundays and Tuesdays, 9.30- 11

Course description

Operations research (OR) has been catching the attention of many academicians and scientists as well because of its applicability and usefulness for many fields, such as business, engineering, economics, and industry in general, therefore this course will introduce students to the optimization theory and how to apply it in the managerial decision making, understanding and modeling the problem correctly and applying appropriate optimization tools and skills to solve the mathematical model will be discussed during the course, and how to use the right quantitative techniques in organizational optimization resources will be a major concern for the course. Another goal of this course is to teach students to formulate, analyze, and solve mathematical models that represent real-world problems. In particular, we will cover linear programming, transportation and assignment models, business network problems, and queueing models.

Course objectives

1. The course aims to enrich the quantitative business dimension among business students.
2. To strengthen the student decision making skills by applying the most appropriate quantitative technique.
3. Understand the theoretical workings of the simplex method for linear programming and perform iterations of it by hand.
4. Understand the relationship between a linear program and its dual, including strong duality and complementary slackness
5. Perform sensitivity analysis to determine the direction and magnitude of change of a model's optimal solution as the data change
6. Solve specialized linear programming problems like the transportation and assignment problems
7. Solve business network and queueing models

Course contents and schedule

1. Introduction to operations research (1st week)
2. How to Develop the operations research model (2nd week)
3. The graphical Linear Programming Models (3rd week)
4. The simplex method (fourth week)
5. The Big- M method (fifth week)
6. Duality and sensitivity analysis (6th and seventh week)
7. Transportation and Assignment problems (eighth and 9th week)
8. Project management/ PERT and CPM networks (tenth and eleventh week)
9. Queueing theory (twelfth and thirteenth week)

10. Computer applications on QM for Windows software (fourteenth and fifteenth week).

References:

1, Render, Barry, Ralph M. Stair Jr, and Michael E. Hanna. "Quantitative Analysis for Management,eleventh edition, 2012. Pearson, USA.

2. Bernard Taylor, Introduction to Management Science, Ninth Edition, 2006, Pearson, USA