Jerash University
Faculty of Science
Department of Science/ Mathematics
Second Semester 2013-2014

Course Information	
Course Title	**Linear Programming and Game Theory**
Course Number	**303374**
Prerequisites	**Linear Algebra (1)**
Instructor	**Dr. Mohammad Almomani**
Office Location	**Alkwarzmi 425**
Office Hours	**(Su. Tu. Th. 12:00-1:00) & (Mo. W. 9:30-11:00)**
Course Objectives and Description	

The specific objectives of the course are the following: - Set up a model that correctly represents the major features of a situation original presented in narrative form. Identify significant limitations of a model and explain why such limitations occur. Solve model based on linear programming by the Simplex Method. Interpret solutions of models in terms of the original problem. Define technical terms and describe algorithms or basic concepts related to the model presented in the course. Learn how to use the   Lindo and Lingo Softwares. See the applications of linear programming: Transportation Problem.

Text Book	
Title	**Introduction to Mathematical Programming: Applications and Algorithms**
Author(s)	**W. L. Winston**
Publisher	**Duxbury**
Year	**2002**
Edition	**4th edition**
References	**1) Introduction to Operations Research, F. S. Hillier & G. J. Lieberman, 8th edition, MacGraw-Hill (2001).**
	2) Operations Research: An Introduction, Hamdy Taha, 7th edition, Prentice Hall, NJ, (2002).

Assessment Policy	
Assessment Type	**Weight**
First Exam	**20%**
Second Exam	**20%**
Participation	**10%**
Final Exam	**50%**
Over all	**100%**

Course Content

Week	Topics	Covered Sections
1	**Introduction to Linear Programming (LP), The Graphical Solution.**	3.1, 3.2
2	**Special Cases, Examples of LP.**	3.3, 3.4, 3.5
3	**How to Convert an LP to Standard Form, Preview of the Simplex Algorithm. The Simplex Algorithm. Using the Simplex Algorithm to Minimization Problem.**	4.1, 4.2, 4.3, 4.4
4	**Alternative Optimal Solution, Unbounded LPs, Degeneracy and the Convergence of the Simplex Algorithm.**	4.5, 4.6, 4.9
5	**Finding a Feasible Basis, The Big-M Method. The Two Phase Simplex Method.**	4.10, 4.11
First Exam		
6	**Unrestricted-in-Sign Variables.**	4.12
7	**Sensitivity Analysis: The Computer and Sensitivity Analysis.**	5.2
8	**Sensitivity Analysis and Duality, Some Important Formulas, Sensitivity Analysis. Finding the Dual of an LP.**	6.2, 6.3, 6.5
9	**The Dual Theorem and Its Consequences, Shadow Prices.**	6.7, 6.8
10	**Duality and Sensitivity, Complementary Slackness.**	6.9, 6.10
11	**The Dual Simplex Method.**	6.11
Second Exam		
12	**Formulating Transportation Problem, Finding a BFS.**	7.1, 7.2
13	**The Transportation Simplex Method.**	7.3
14	**The Assignment Problem, Transshipment Problems.**	7.5, 7.6
15	**Network Models.**	8.1, 8.2, 8.3
Final Exam		

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تعليمات إضافية	
الغش	الغش مخالف لقواعد وقوانين الجامعة لذلك ستعرض نفسك للعقوبات حسب قوانين الجامعة إن حاولت الغش.
حضور المحاضرات	حضور المحاضرات أمر أساسي وإذا وصل غيابك عن محاضرات المادة إلى 15% من المجموع الكلي للمحاضرات ستحرم من المادة تبعاً لقوانين الجامعة.

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