



**JORDAN UNIVERSITY OF SCIENCE AND
TECHNOLOGY
INDUSTRIAL ENGINEERING DEPARTMENT**



Course Number and Name	IE 455: Operations Research II
Course Description	This course is a continuation of the first course in Operations Research (Pre-requisite: OR I: IE 344). The focus is on complementary concepts and methods of Integer Linear Programming, Goal Programming, Probabilistic Models, Decision and Risk Analysis, Queuing Systems, and Simulation Modeling.
Credits and contact hours	3 Credit hours; 3 hours of lectures
Pre- or Co-requisites	IE 344 Operations Research 1
Required/ Elective	Required

Text Book(s)	<ul style="list-style-type: none">Taha, Hamdy (2011). <i>Operations Research: An Introduction</i>, 9th edition. Prentice Hall International Edition.
Software tools	TORA
References	<ul style="list-style-type: none">Winston, Wayne (2004). <i>Operations Research: Applications and Algorithms</i>. 4th ed. Thompson, Belmont, CA.INFORMS/Operations Research: http://iol-a.informs.org/site/ Operations ResearchINFORMS: http:// www.informs.org/The Math Forum: http://mathforum.org/library/topics/operations_research/

Course Objectives	<ul style="list-style-type: none">A strong understanding of basic probability conceptsFormulate a real-world problem as a mathematical programming modelFamiliarity with Markov chains in discrete timeUnderstand the applications of integer programmingFamiliarity with queuing models and using available software in analyzing such models.Develop professional ethics, encourage life long learning, and enhance students' communication skills.•
Measured Outcomes	3e

Evaluation		
Assessment Tool	Expected Due Date	Weight
Class discussion and Quizzes		10%
First Exam		25 %
Second Exam		25 %
Final Exam	According to the University final examination schedule	40 %

Topics Covered		
Weeks	Topics	Chapters in Text
1	Review of Probability Theory	Chapter 14
2-5	Markov Chains	Chapter 17
6-8	Queuing Systems	Chapter 18
9-11	Decision Analysis	Chapter 15
12-13	Integer Linear Programming	Chapter 9
14	Overview of Goal and Nonlinear Programming	Chapters 8 and 21