

### جامعة الزيتونية الأردنية Al-Zaytoonah University of Jordan كلية العلوم وتكنولوجيا المعلومات Faculty of Science and IT



" عراقة وجودة" "Tradition and Quality"

Course Plan for Bachelor program - Study Plan Development and Updating Procedures/ Software Engineering Department QF01/0408-4.0E

Study plan No.	2022-2023	University Specialization	Artificial Intelligence	
Course No.	0142314	Course name	Operation Research	
Credit Hours	3	Prerequisite Co-requisite	Calculus 1	
Course type	□ MANDATORY UNIVERSITY     □ UNIVERSITY ELECTIVE REQUIREMENT   REQUIREMEN	FACULTY Support cour MANDATORY family TS REQUIREMENT requirements	requirement requirements	
Teaching style	☐ Full online learning	☐ Blended learning	Traditional learning	
Teaching model	☐ 2 Synchronous: 1asynchro	nous 2 face to face : 1synchronou	3 Traditional	

### Faculty member and study divisions information (to be filled in each semester by the subject instructor)

Name	Academic rank	Office No.	Phone No.	E-n	nail
Division number	Time	Place	Number of students	Teaching style	Approved model

#### **Brief description**

Operations research helps in solving problems in different environments that needs decisions. The module converts topics that include: linear programming, Transportation, Assignment, and CPM/MSPT techniques. Analytic techniques and computer packages will be used to solve problems facing business managers in decision environments. This module aims to introduce students to use quantitively methods and techniques for effective decisions—making; model formulation and applications that are used in solving business decision problems.

Learning resources

Dearing resources				
Course book information (Title, author, date of issue, publisher etc)	1- Hamdy A. Taha. 2006. Operations Research: An Introduction (8th Edition). Prentice-Hall, Inc., USA.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	<ol> <li>Russell and Norvig, Artificial Intelligence: A Modern Approach, 3rd edition, Pearson Education, Inc., Prentice-Hall-Series, 2010.</li> <li>Jeff Heaton, Artificial Intelligence for Humans, Volume.1, Fundamental Algorithms, Kindle Edition, 2013.</li> </ol>			
Supporting websites	-			
The physical environment for teaching	Class room	□ labs	☐ Virtual educational platform	□ Others
Necessary equipment and software	-			
Supporting people with special needs	-			
For technical support	-	·	·	



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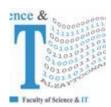
#### Course learning outcomes (S = Skills, C= Competences K= Knowledge,)

No.	Course learning outcomes	The associated program learning output code			
	Knowledge				
<b>K1</b>	Presenting the concepts and Benefits of OR.	MK1			
K2	To be acquainted with the basics of various advanced data science topics.	MK1			
<b>K3</b>	Describing concepts of mathematical formulation.	MK1			
<b>K4</b>	Describing the concepts of production systems.	MK1			
K5	Presenting simplex method.	MK1			
<b>K6</b>	Describing transportation model.	MK1			
	Skills				
S1	understanding the basic concepts and techniques of the OR.	MS1			
S2	Learning how to represent OR in both theory and practice with careful attention to the underlying principles of the OR	MS1			
<b>S3</b>	Learning the main components of production systems.	MS1			
S4	Learning the concepts of Big M-method.	MS1			
	Competences				
C1	use quantitively methods and techniques for effective decisions—making; model	MC1			
C2	Apply model formulation and applications that are used in solving business decision problems.	MC1			

Mechanisms for direct evaluation of learning outcomes

Type of assessment/learning style	Fully electronic learning	Blended learning	Traditional Learning (Theory Learning)	Traditional Learning (Practical Learning)
First exam	0	0	0	0
Second / midterm exam	%30	%30	%30	30%
Participation / practical applications	0	0	20	30%
Asynchronous interactive activities	%30	%30	0	0
final exam	%40	%40	%50	40%

**Note:** Asynchronous interactive activities are activities, tasks, projects, assignments, research, studies, projects, work within student groups ... etc, which the student carries out on his own, through the virtual platform without a direct encounter with the subject teacher.



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Schedule of simultaneous/face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	What is OR	Lecture	<b>TB1:</b> 1-7
2	Modeling with leaner programming	Lecture	<b>TB1:</b> 15-20
3	Modeling with leaner programming	Lecture	<b>TB1:</b> 39-47
4	The Simplex Method	Lecture	<b>TB1:</b> 56-65
5	The Simplex Method	Lecture	<b>TB1:</b> 69-83
6	Artificial Starting Solution	Lecture	<b>TB1:</b> 95-99
7	Artificial Starting Solution	Lecture	<b>TB1:</b> 95-99
8	Midterm	Lecture	Revision
9	Special Case in Simplex Method	Lecture	<b>TB1:</b> 134-160
10	Special Case in Simplex Method	Lecture	<b>TB1:</b> 477-483
11	Sensitivity Analysis	Lecture	<b>TB1:</b> 170,171, 176, 182, 190-192
12	Sensitivity Analysis	Lecture	<b>TB1:</b> 170,171, 176, 182, 190-192
13	Transportation Model	Lecture	<b>TB1:</b> 199-202, 210-212
14	TM	Lecture	<b>TB1:</b> 233-238
15	TM	Lecture	<b>TB1:</b> 267-270, 271, 276-277
16	Final Exam	Lecture	

Schedule of simultaneous / face-to-face encounters and their topics

Week	Subject	learning style*	Reference **
1	To be filled by the instructor		
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

<sup>\*</sup> Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.

<sup>\*\*</sup> Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.