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

Study plan No.	2025-2026		**University Specialization**		Artificial Intelligence		
Course No.	0112250, 0142314, 0135213		**Course name**		Operations Research		
Credit Hours	3		**Prerequisite Co-requisite**		Calculus 1		
Course type	☐ MANDATORY UNIVERSITY REQUIREMENT	☐ UNIVERSITY ELECTIVE REQUIREMENTS	☐ FACULTY MANDATORY REQUIREMENT	☐ Support course family requirements	☑ Mandatory requirements	☐ Elective Requirements	
Teaching style	☐ Full online learning		☑ Blended learning		Traditional learning		
Teaching model	☐ **2 Synchronous: 1asynchronous**		☑ **2 face to face : 1synchronous**		**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-mail
Dr. Jafar Abukhait	**Professor**	**336**		**j.abukhait@zuj.edu.jo**
Division number	**Time**	**Place**	**Number of students**	**Teaching style**
0142314-1	**9:30-11 Su, Tu**	**9136**	**26**	**Blended**
Name	**Academic rank**	**Office No.**	**Phone No.**	**E-mail**
Dr. Hani Omar	**Assistant Professor**	**210**		**h.omar@zuj.edu.jo**
Division number	**Time**	**Place**	**Number of students**	**Teaching style**
0112250-1	**12:30-2 Su, Tu**	**9302**	**49**	**Blended**
0135213-1	**9.30-11 Su, Tu**	**9135**	**22**	**Blended**

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

Course book information (Title, author, date of issue, publisher ... etc)	1- Hamdy A. Taha. 2017. Operations Research: An Introduction (10th Edition). Pearson, USA.			
Supportive learning resources (Books, databases, periodicals, software, applications, others)	1. Russell and Norvig, Artificial Intelligence: A Modern Approach, 3rd edition, Pearson Education, Inc., Prentice-Hall-Series, 2010. 2. Jeff Heaton, Artificial Intelligence for Humans, Volume.1, Fundamental Algorithms, Kindle Edition, 2013.			
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	-

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

No.	Course learning outcomes	The associated program learning output code
	Knowledge	
K1	Presenting the concepts and Benefits of OR.	MK1
K2	To be acquainted with the basics of various advanced data science topics.	MK1
K3	Describing concepts of mathematical formulation.	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
S3	Learning the main components of production systems.	MS1
	Competences	
C1	Working in groups to use quantitively methods and techniques for effective decisions–making	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				
Second / midterm exam		**%30**		
Participation / practical applications		**10%**		
Asynchronous interactive activities		**20%**		
final exam		**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.

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

Week	Subject	learning style*	Reference **
1	What is OR	Lecture	**TB1:** 1-7
2	Introduction to Mathmatical Modeling	Lecture	**TB1:** 8-14
3	Modeling with leaner programming	Lecture	**TB1:** 15-20
4	Modeling with leaner programming	Lecture	**TB1:** 39-47
5	Modeling with leaner programming	Lecture	**TB1:** 39-47
6	The Simplex Method	Lecture	**TB1:** 56-65
7	The Simplex Method	Lecture	**TB1:** 69-83
8	**Midterm**	Lecture	**Revision**
9	Special Case in Simplex Method	Lecture	**TB1:** 134-160
10	Special Case in Simplex Method	Lecture	**TB1:** 477-483
11	Transportation Model	Lecture	**TB1:** 199-202, 210-212
12	Transportation Model	Lecture	**TB1:** 199-202, 210-212
13	Transportation Model	Lecture	**TB1:** 199-202, 210-212
14	Project_Presentation	Lecture	
15	Project_Presentation	Lecture	
16	**Final Exam**	Lecture	

*** Learning styles: Lecture, flipped learning, learning through projects, learning through problem solving, participatory learning ... etc.**
**** Reference: Pages in a book, database, recorded lecture, content on the e-learning platform, video, website ... etc.**