The University of Jordan

Accreditation & Quality Assurance Center

COURSE Syllabus

1	**Course title**	Operations Research
2	**Course number**	1904341
3	Credit hours (theory, practical)	3 hours
	Contact hours (theory, practical)	
4	Prerequisites/corequisites	Advanced programming 1901215
5	Programtitle	Business Information Technology
6	Programcode	04
7	Awarding institution	JordanUniversity
8	Faculty	KASIT
9	Department	Business Information Technology Dept
10	Level of course	Third Year
11	Year of study andsemester (s)	2014/2015
12	Final Qualification	B.SC
13	Other department(s) involved in teaching the course	None
14	Language of Instruction	English
15	Date of production/revision	20/5/2015
16	Required/ Elective	Required

17. Course Coordinator:

Officenumbers,officehours, phonenumbers,andemailaddresses shouldbelisted.
304, 11 -12, Ext. 22609, mzamzeer@ju.edu.jo

18.Other instructors:

Officenumbers,officehours, phonenumbers,andemailaddresses shouldbelisted.

11 – 12 Days Sunday, Monday and Tuesday, Ext. 22637, Ibrahim.aljaraj@ju.edu.jo

19. Course Description:

This course emphasizes the use of quantitative methods and techniques for effective decision-making. Model formulations and applications are used in solving business decision problems. Topics include: Linear Programming, Transportation, Assignment, CPM/PERT techniques, and Game Theory are covered. The course is an application oriented, it emphasizes learning by doing. Analytic techniques and computer packages will be used to solve problems facing business managers in decision environments.

20. Course aims and outcomes:

A- Aims

Enable students to:

1. Understand the mathematical modelling.
2. Understand the transformation of real world problems into standard form.
3. Understand the topics included in this course properly.
4. Define and select the suitable OR technique to solve a particular problem.
5. Highlight the significance of quantitative techniques for effective decision making.

B- Intended Learning Outcomes (ILOs): Upon successfulcompletionof thiscoursestudentswillbeableto…

A- Knowledge and Understanding: Students should …

A1: Understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
A2: Learn how to define and solve Linear Programming models by using various techniques.
A3: Understand the Post Optimality analysis and Duality.
A4: Learn how to build and solve the Transportation models.
A5: Understand how to build and solve the Assignment models.
A6: Learn how to build and solve the Network models using "CPM and PERT" techniques.
A7: Know how to build and solve The Game Theory models.

B- Intellectual skills: with the ability to …

B1) Develop analytical skills of problem formulation into appropriate decision models.
B2) Design new simple model like: CPM, PERT to improve decision-making.
B3) Develop critical thinking and objective analysis of decision problems.

C- Subject specific skills – with ability to …

C1) Acquire hands-on experience of computer packages dealing with quantitative techniques.

C2) Implement practical cases, by using Win QSB.

D- Transferable skills – with ability to

D1) Discuss and work in a group in order to design and write the specification of a new case .

D2) Work in a group in order to implement Win QSB programs that adhere to the specification of the newly designed cases.

D3) Work with other groups in order to make different implementations, of the same case specification.

D4) Present the final work (project) and make a demo.

21. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Introduction to Operations Research (OR)	1	Zamzeer and Aljarah	A1, A2, B1	T: Lecture and presentation L: Reading lecture notes and Chap 1 A: in Class cases	Hamdy, T., Operations Research

Linear Programming (LP) Introduction	1	Zamzeer and Aljarah	A1, A2, B3	T: Lecture and presentation L: Reading lecture notes and Chap 2 A: in Class cases	Hamdy, T., Operations Research
Linear Programming – Graphical Solutions	2	Zamzeer and Aljarah	A2, B3, C1, C2	T: Lecture and presentation L: Reading lecture notes and Chap 3 A: in class cases	Hamdy, T., Operations Research
Linear Programming – Simplex Method / Maximization	3 - 4	Zamzeer and Aljarah	A2, B2, C2, D1, D2	T: Present examples L: Reading lecture notes and Chap 4 A: in class cases	Hamdy, T., Operations Research
Linear Programming – Simplex Method / Minimization	5 - 6	Zamzeer and Aljarah	A2, B2, C2, D1, D2	T: Present examples L: Reading lecture notes and Chap 5 A: Quiz	Hamdy, T., Operations Research
Post Optimality Analysis and Duality	7 - 8	Zamzeer and Aljarah	A3, B1, C1, C2, D2	T: Present examples L: Reading lecture notes and Chap 5 A: Quiz	Hamdy, T., Operations Research
Assignment Model	9 - 10	Zamzeer and Aljarah	A5, B1, B3, C1, C2, D1, D2	T: Present examples L: Reading lecture notes and Chap 5 A: in class cases	Hamdy, T., Operations Research
Transportation Model	11 – 12	Zamzeer and Aljarah	A4, B1, B3, C1, C2, D1, D2	T: Present examples L: Reading lecture notes and Chap 5 A: Quiz	Hamdy, T., Operations Research
Network Models/ Critical Path Method (CPM)	13	Zamzeer and Aljarah	A6, B2, C1, C2, D1, D3	T: Present examples L: Reading lecture notes and Chap 5 A: Quiz	Hamdy, T., Operations Research
Network Models/ Program Evaluation and Review Techniques (PERT)	14 - 15	Zamzeer and Aljarah	A6, B2, C1, C2, D1, D3	T: Present examples L: Reading lecture notes and Chap 5 A: in class cases	Hamdy, T., Operations Research
Game Theory	16	Zamzeer and Aljarah	A7, B1, B3, C1, C2, D1, D2, D4	T: Present examples L: Reading lecture notes and Chap 5 A: Quiz	Hamdy, T., Operations Research

22. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:				
Method	**Lecture**	**Demo**	**Laboratory**	**Case study**

Learning outcome	A1+A2+A3	B2+ D4	C1 + D2 +D3	B1 + D1

23. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Assessment	Exams + Assignments	Exams + Assignments	Project + Presentation	Exams + Presentation

24. Course Policies:

A- Attendance policies:

B- Absences fromexams andhandinginassignmentson time:

C- Health and safetyprocedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

1. First Exam 25%
2. Second Exam 25%
3. Final Exam 50%

F- Available university services that support achievement in the course:

25. Required equipment:

26. References:

A- Required book (s), assigned reading and audio-visuals:

1. Hamdy, T., Operations Research: An Introduction, 8th ed. (New Jersey: Pearson Prentice Hall), 2013.

B- Recommended books, materials, and media:

2. Lieberman, H., Introduction to Operations Research, (New York: McGraw Hill International Edition), 2005.

27. Additional information:

Name of Course Coordinator: ----------Signature: ---------- Date: ----------

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------

Copy to:
Head of Department
Assistant Dean for Quality Assurance
Course File