

**The University of Jordan**

**Accreditation & Quality Assurance Center**

**COURSE Syllabus**

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| **1** | Course title | Operation Research |
| **2** | Course number | 5402234 |
| **3** | Credit hours (theory, practical) | 3 hours |
| Contact hours (theory, practical) | 3 hours |
| **4** | Prerequisites/corequisites | None |
| **5** | Program title | Business Information Technology |
| **6** | Program code | 2 |
| **7** | Awarding institution  | The University of Jordan |
| **8** | Faculty | Faculty of Systems And Information Technology |
| **9** | Department | Business Information Technology |
| **10** | Level of course  |  |
| **11** | Year of study and semester (s) | 2017/2018 |
| **12** | Final Qualification | Bachelor |
| **13** | Other department (s) involved in teaching the course | None |
| **14** | Language of Instruction | English |
| **15** | Date of production/revision |  |

16. Course Coordinator:

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| Ahmed Atallah AlsarairahOffice number : (324) , Office Hours : Sun 11-12 , Mon 11 -12 , Tues 9-10 E-mail : a.alsarairah@ju.edu.jo Phone : 0232090450 - ( 35067 ) |

17. Other instructors:

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| *None* |

**18. Course Description:**

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| Operations research helps in solving problems in different environments that needs decisions. The module cover 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. |

19. Course aims and outcomes:

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| A- Aims:General Objectives : Understand the concepts underlying the theory of operations research. Special Objectives : Understand the special concepts and application of operations research. B- Intended Learning Outcomes (ILOs):  |
|  Be able to understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type. |
| Be able to build and solve Transportation Models and Assignment Models. |
| Be able to design new simple models, like: CPM, MSPT to improve decision –making and develop critical thinking and objective analysis of decision problems. |

 20. Topic Outline and Schedule:

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| **Unit One : What Is Operations Research? (Two weeks )**Introduction to Operations Research (OR) Operations Research definition and origin. Essential features of the OR approach. Stages in OR study.**Achieved ILOs** : Be able to understand the definition of OR**Evaluation Methods:** class participation***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Two : Linear Programming ( Two weeks )**LP and allocation of resources, LP definition, Expressing LP problems,Limitations or constraints,Maximization Then Minimization problems.**Achieved ILOs** : Be able to understand the linear programming**Evaluation Methods:** class participation***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Three** : **Linear Programming – Graphical Solutions (Two weeks )**Introduction To Graphical LP Maximization solution , LP Minimization solution.**Achieved ILOs** : Be able to understand the graphical solution**Evaluation Methods:** Home work***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Four : Simplex method ( Two weeks )**Introduction, Simplex method definition, formulating the Simplex model. Linear Programming – Simplex Method for Maximizing ,and Minimizing problems**Achieved ILOs** : Be able to understand the simplex method**Evaluation Methods:** Quiz***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Five : Dakin's Algorithm ( One week )**Dakin's Algorithm for mixed integer linearPrograms.**Achieved ILOs** : Be able to understand the dakin's algorithm**Evaluation Methods:** class participation***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Six: The Assignment Model** **(One week )**Basic Assumptions Solution Methods:- Short-Cut Method (Hungarian Method)**Achieved ILOs** : Be able to understand the assignment model **Evaluation Methods: Home work*****Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Seven: The Transportation Model ( Two weeks )**Solution Methods: 1. Feasible Solution: - The Northwest Method, - The Lowest Cost Method- Vogel's Approximation method**Achieved ILOs** : Be able to understand the transportation problem**Evaluation Methods: Quiz*****Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Eight : The Transportation Model (One week )**2.Optimal Solution: The Stepping Stone Method, Modified Distribution (MODI) Method**Achieved ILOs** : Be able to understand the modi and stepping stone method**Evaluation Methods:** Home work***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |
| **Unit Nine : Critical Path Method of networks (Two weeks )**Critical Path Method of networksPert calculation , Game theory**Achieved ILOs** : Be able to understand the critical path method**Evaluation Methods:** class participation***Textbook:*** Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 2003 |

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21. Teaching Methods and Assignments:

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| Quizzes , home works and assignment |

22 .Evaluation Methods and Course Requirements:

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| Students will be based assessed on the following:

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| **Exam** | **Date** | **Weight** |
| **Class Activities****(Quizzes and H.W)** | During the semester | 30% |
| **Mid- Exam** | 15/11/2017 - Wednesday | 30% |
| **Final Exam** | To be assigned by the registrar office | 40% |

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23. Course Policies:

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| Absence from lectures shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant faculty shall not be allowed to take the final examination and shall receive a mark of zero for the course. If the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course.  |

24. Required equipment:

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| None |

**25. References:**

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| 1. Required book (s), assigned reading and audio-visuals:

Taha, Hamdy, Operations Research, 7th edition, (USA: Macmillan Publishing Company), 20031. Recommended books, materials, and media:

Wayne L. Winston, Practical Management Science: spreadsheet modelling and applications |

Name of Course Coordinator : **Ahmed ALsaraireh** - Signature: ------------------------- Date**: 17.9.2017**

 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