

**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 Alsarairah  Office number : (324) ,  Office Hours : Sun 11-12 , Mon 11 -12 , Tues 9-10  E-mail : [a.alsarairah@ju.edu.jo](mailto: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 linear  Programs.  **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 networks  Pert 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 | |

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:   |  |  |  | | --- | --- | --- | | **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% | |

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), 2003   1. 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