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**Department of Statistics**

**College of Administration and Economics**

**Salahaddin University-Erbil**

**Subject: Operations Research**

**Course Book: (Stage:Third)**

**Lecturer's Name: Drakhshan Jalal Hassan**

**Academic Year: 2022/2023 (Second Course)**

**Course Book**

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| **1. Course name** | **Operations Research** |
| **2. Lecturer in charge** | **Drakhshan Jalal Hassan** |
| **3. Department/ College** | **Statistics /College of Administration and Economics** |
| **4. Contact** | **drakhshan.hassan@su.edu.krd****Mobile:07504902074** |
| **5. Time (in hours) per week**  | **Theory: (4 hours)****Practical: (2 hours)** |
| **6. Office hours** | **(2 hours), Tuesday 8.30-10.30**  |
| **7. Course code** | **SAE104** |
| **8. Teacher's academic profile**  | **I graduated from Salahaddin university-Erbil in 2003 in College of Administration & Economics Statistics department. I have earned master's degree in applied Statistics in 2011, and I start as assistant lecturer teaching in Statistics department till now, I have been teaching in Statistics Department at Salahaddin University since 2011. I have taught (Principle of Statistics, Computer Applications, and doing researches as well.** |
| **9. Keywords** | **Operations: The activities carried out in an organization.****Research: The process of observation and testing characterized** **By the scientific method. Situation, problem statement, model construction, validation, experimentation, candidate solutions.****Model: An abstract representation of reality. Mathematical, physical, narrative, set of rules in computer program.** |
| **10. Course overview:****The general purpose of this course is to study the basic concepts of Operations Research****This course is divided into two parts. The first part deals with linear programming problem, method of this** **and solved it by one of the methods,, and the second part deals with Transportation** **Problem** |
| **11. Course objective:****1-This module aims to introduce students to quantitative methods and techniques for effective decisions- making; model formulation and applications that are used in solving business decision problems.****2-To provide students with techniques for formulating operation research problems they may encounter in industry.****3-To provide students with solutions for solving operation research problems.****4-To teach students how to analyze and interpret the solutions obtained from solving operation research problems.** |
| **12. Student's obligation****Different forms of teaching will be used to reach the objectives of the course: power****point presentations for the head titles, definitions and summary of conclusion,****Classification of material and any other illustrations. There will be classroom discussions****and the lecture will give enough background to translate, solve, analyses, and evaluate** |
| **13. Forms of teaching****A very popular approach now is to use today premier spreadsheet package, Microsoft Excel, to formulate small OR models in a spreadsheet format. The Excel solver then is used to solve the models. Most websites include a separate Excel file for nearly chapters. Each time a chapter presents an example that can be solved using Excel .For many of the models. an Excel template also is provided that already includes all equations necessary to solve the model** |
| ***14. Assessment scheme******During the study, there will be two Exams, all exams are closed book.******Grading:******First Exam 18 Mark******First Exam 18 Mark******4 Mark for seminars and homework and daily ac.vi.es.*** |
| **15. Student learning outcome:****At the end of this course, students are expected to be able to understand and find****reasonable date in the company , provide a method for using sample data to find the objective function and the subject function and how to take profit in the product.****-------------------------------------------------------------------------------------------------------------------------------------------16. Course Reading List and References‌:****1-فتحي خليل حمدان- رشيد رفيق مرعي "مقدمه في بحوث العمليات"2008****2-د.دلال صادق الجواد"بحوث العمليات "2008****3- عبدالكريم هادي شعبان "تطبيقات في الاساليب الميه وبحوث العمليات "2008****4-كاسر نصر المنصور "الاساليب الكميه في اتخاذ القرارات الاداريه" 2006****5-"Operation Research,Application and Algorithms",Wayn L.Winston,2004.****6-"Operation Research an introduction ,8 edition",Hamdy A.Taha,2007.****7--"Operation Research an introduction ,2 edition",Hamdy A.Taha,1987.****8. Don T. Phillips “Operation Research Principles and Practice” 1976**. |
| **17. The Topics:** | **Lecturer's name** |
|  **Chapter 4: Transportation Problems:****4.1- Finding the starting feasible solution North-West Corner Method.****4.2- Least cost Method.****4.3- Vogel's approximation Method.****4.4 Improving the Initial solution by Multipliers Modified Method.** **Chapter 5: Game theory*** 1. **Types of games**
	2. **Optimal solution of two person zero sum games.**
	3. **Games with Mixed strategies.**
	4. **Method for (2×2) Matrices.**
	5. **Graphical solution of (2×N) and (M×2) games.**

 **5.6 Linear Programming Methods of (M×N) games**  **Chapter 6: Network Optimization Medals Network -analysis****6.1The earliest start time and the latest with Total time.*** 1. **Critical Path Method (CPM).**

**6.3 Program Evaluation and Review Technique (PERT).** | **Lecturer's name****ex: (2 hrs)** |
| **19 Extra notes** |
| **20. Peer review** |