


Sub.	Course Description – توصيف مقرر دراسي	الموضوع	 <b>كليات المعرفة</b> ALMAAREFA COLLEGES
Date		التاريخ	

Course Code & No	IE321		رقم المقرر ورمزه
Course Name	Industrial Operations Research-1-		اسم المقرر
Credit Hours	3 (3+1+1)		عدد الساعات المعتمدة
Pre-requisite	MATH 441, COMP 201		المتطلب السابق

<b>General Description</b>	توصيف عام
<p>Introduction to mathematical programming and optimization; Characteristics of linear programs; Modeling of various industrial programs as linear programs; Graphical solutions; Introduction to the theory of simplex methods; Big M method, Unbounded and infeasible solutions; Sensitivity analysis and introduction to the duality theory; Transportation and assignment problems and solution techniques; Shortest path, Minimum spanning tree, and maximum flow problems; Goal Programming.</p>	

<b>Course Objectives</b>	أهداف المقرر
<p>The course aims to provide the students with knowledge and mathematical techniques for modeling and solving industrial problems in production systems.</p> <p><b>By the end of the course, each student should be able to</b></p> <ul style="list-style-type: none"> <li>• Model and formulate production system problems using linear programming, goal programming and net work flow techniques.</li> <li>• Calculate and analyse the system parameters for optimal solution</li> <li>• Evaluate and justify the result accuracy by sensitivity analysis</li> </ul>	

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Course Outlines	مفردات المقرر
<ul style="list-style-type: none"> <li>• Introduction to operations research</li> <li>• Linear programming modeling, and selected engineering and industrial applications</li> <li>• Graphical solutions of linear programs</li> <li>• Simplex Method</li> <li>• Network analysis: Shortest path, minimum spanning tree, and maximum flow and minimum cut problems</li> <li>• Goal Programming</li> </ul>	

References	المراجع
<p><b>Required Textbooks</b></p> <ul style="list-style-type: none"> <li>• Operations Research: An introduction, 9th Ed., H. A. Taha, Prentice Hall, latest edition</li> <li>• Applications of optimization with Xpress-MP, Christelle Guéret, Christian Prins, Marc Sevaux, Editions Eyrolles, latest edition.</li> </ul> <p><b>Essential References Materials</b></p> <ul style="list-style-type: none"> <li>• Introduction to Operations Research, 8th Ed., Hiller and Lieberman, McGraw Hill, 2005</li> <li>• Network flows: theory, algorithms, and applications, Ravindra K. Ahuja, Thomas L. Magnanti, James B. Orlin, Prentice Hall, 1993 - Business &amp; Economics</li> </ul>	