١ ـ بيانات المقرر		
المستوى: الرابع	اسم المقرر : **Operation research**	كود المادة : **Math 421**
عدد الوحدات الدراسية: ٣ ساعة معتمدة نظرى ٢: تمارين: ٢ عملى: ٠		التخصص : الإحصاء وعلوم الحاسب

For students undertaking this course, the aims are to: - Provide a grounding in the major traditional areas of Operational Research/Management Science through a study of techniques and their application in a variety of business settings. - Familiarize the student with the OR methodology of problem solving and appraise its application in a range of problem situations.	٢ ـ هدف المقرر:
٣ ـ المستهدف من تدريس المقرر	
a- Knowledge and Understanding **On successfully completing the course, students will be able to:** a1-Be aware of the Formulation of linear programming problems in management a2-Understand the ideal of modeling LP problems. a3-Know and understand how to use game theory concepts in our life.	أ ـ المعلومات و المفاهيم :
b- Intellectual Skills **On completing this course, students will be able to:** b1-Solve linear programming problems graphically. b2-Apply linear programming techniques to various types of decision Problems. b3-Recognize the changing nature and role of OR in business.	بـ المهارات الذهنية :
c- Professional and Practical Skills **On completing this course, students will be able to:** c1-Use the Matlab software package in solving linear programming problems. c2-Develop model building and problem solving skills. c3-Use the operational procedures to solve linear programming problems.	جـ المهارات المهنية الخاصة بالمقرر :
d- General and Transferable Skills **On completing this course, students will be able to:** d1-Work as a team. d2- Solve problems d3-Manage their time.	دـ المهارات العامة :
- Introduction - Convex Analysis - Saddle point optimality criteria of nonlinear programming(withoutdifferentiability) - Optimality criteria in NPP (with differentiability) - The penalty function method - Duality in NPP - Linear Fractional Programming - Quadratic forms - The penalty function method - Duality in NPP - Linear Fractional Programming	٤ ـ محتوى المقرر :
1-Lectures 2- Tutorials	٥ ـ أســـاليـــب التعليــــــم و التعلـم
The same as normal students, only skeletal disabilities are allowed in the faculty of science.	٦ ـ أساليب التعليم و التعلم للطـــلاب ذوى القدرات المحدودة

		٧ـ تقويـــــــــم الطـــلاب :

1- Oral Exam. to assess a1-a2,b1-b2,d1-d2 2- Final Exam to assess a1-a2,b1-b2,c1-c2 3- Mid-Term Exam to assess a1-a2,b1-b2,c1-c2		أـ الأساليب المستخدمة
1- Oral Eexam week 16 2- Final Exam week 16 3- Mid-Term Exam week 7		بـ التوقيت
- Mid-Term Examination 10 - Final-Term Examination 80 - Oral Examination 10 - Practical Examination 0 Total 100%		جـ توزيع الدرجات

	٨ـ قائمة الكتب الدراسية و المراجع :
Available at the department	أـ المذكرات
Mangasarian, O. L, Nonlinear programming, McGrow-hill, New York (1969).	بـ الكتب ملزمة
-Rao, S. S., Optimization Theory and Applications, Wiley Eastern limited, New Delhi (1985). -Mital, K. v. Optimization Methods in Operations Research and System analysis, Wiley Eastern limited, New Delhi (1987). -Bazaraa, M.S., Sherali, H. D., and Shatty, Nonlinear programming Theory and Algorithms, John Wiely and Sons, Inc., New York (1993).	جـ كتب مقترحة
http://en.wikipedia.org/wiki/Operations_research	دـ دوريـــات علميــة أو نشرات

(أ) مصفوفة المعارف والمهارات المستهدفة من المقرر الدراسى

المحتويات للمقرر	اسبوع الدراسة	المعارف الرئيسية	مهارات ذهنية	مهارات مهنية	مهارات عامة
1: Introduction	1-2	a1,a3	b1		d1,d2,d3
2: Integer programming	3-4	a1,a3	b1	c1,c3	d1,d2
3: Convex Analysis	5	a1,a2,a3	b1,b2,b3	c1,c2,c3	
4: The nonlinear programming problem	6	a1,a3	b1,b3		d1,d2
5: Saddle point optimality criteria of nonlinear programming(without differentiability)	7	a1,a3	b1,b2,b3	c1,c3	d1,d2
6: Optimality criteria in NPP (with differentiability)	8	a1,a2	b1,b2,b3		
7: The Kuhn_ Tucker stationary point problem	9-10	a1,a2,a3	b1,b3	c1,c2	d1,d2
8: Quadratic forms	11	a1,a2,a3	b1,b2,b3		d1,d3
5: The penalty function method	12	a1,a2	b1,b3	c1,c2,c3	d1,d2
6: Duality in NPP	13	a1,a2	b1,b2	c1,c3	d1,d2
7: Linear Fractional Programming	14	a1,a2	b1	c1,c2	d2

أستاذ المادة : د/ سامح السعيد عبد العزيز عسكر

رئيس مجلس القسم العلمى : أ.د.مجدى الياس فارس