CIHAN UNIVERSITY-SULAIMANIYA

Course Outline

2025-2026

Address:
Chwarchra-Opposite to Family Mall
Sulaymaniyah City
Kurdistan Region–Iraq
Tel: 07714695656,
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MODULE DESCRIPTION FORM

Module Information			
Module Title	**Operation Research**		
Module Type	Degree		☐ Theory ☐ Lecture ☐ Lab ☐ Tutorial ☐ Practical ☐ Seminar ☐ Report ☐ Extra activity
Module Code			
Language	English		
ECTS Credits			
Module Level	Second	**Semester of Delivery**	2nd
Administering Department	Accounting	**College**	
Lecturer	Saya jamal Aziz		
Academic Title	Lecturer	**Qualification**	MSc. Statistics
Module Tutor		**e-mail**	Saya.jamal@sulicihan.edu
Peer Reviewer Name		**e-mail**	
Scientific Committee Approval Date		**Version Number**	
Cycle of Study	Bachelor	**Form of Education**	Full time

Relation with other Modules			
Prerequisite module	Quantitative Methods	**Semester**	1
Co-requisites module		**Semester**	

Cihan University-Sulaimaniya?

College of

Department:

Discipline:

Stage:

Total Contact Hours:	45
Total Self Study Hours:	90
Total No. Hours:	135
ECTS:	5

No. of Weeks	Contact Hours					Self-Study					
	Theoretical	Practical	Lab	Project	Visit	Quiz	Reading	Assignment	Report	Midterm Exam.	Final Exam.
1st Week (Registration)	2	1	-	-	-	-	-	-	-		
2nd Week	2	1	-	-	-	-	2	-	-		
3rd Week	2	1	-	-	-	-	2	1	-		
4th Week	1	2	-	-	-	4	2	2			
5th Week	1	2					2	1			
6th Week	2	1					2		5		
7th Week	2	1				4	2				
8th Week	2	1					2			12	25
9th Week	2	1					2	2			
10th Week	2	1					2	1			
11th Week	2	1					2	1			
12th Week	2	1				4	2	2			
13th Week	2	1					2	1			
14th Week	2	1					1				
15th Week (Pr. Final Exa	2	1									
16th Week (Final Exam.)											
TOTAL	28	17				12	25	11	5	12	25

	Delivery Plan (Weekly Syllabus)
	Material Covered
Week 1	Registration
Week 2	**Chapter 1: Basics of Operations Research :-** • Introduction • Some Definitions of Operations Research
Week 3	• How Operations Research works • Some Technique of Operations Research
Week 4	**Transportation model** • Introduction • Formulating Transportation problems **Transportation Problem** • North West Corner Method
Week 5	• Least Cost Method (Matrix Minimum Method) • Vogel Approximated Method
Week 6	**OPTIMALITY TESTING AND SOLUTION** • Stepping-Stone Method • Modified Distribution (MODI) Method
Week 7	**Chapter 2: Network Analysis:-** • Definitions, Activity, Event, Path, Dummy. • Arrow (network) Diagram Representation • Critical Path Method (C.P.M.) • Network Analysis, CPM Computations • Critical Path Method (C.P.M.) • Critical Path Calculations
Week 8	• Program's Evaluation and Review Technique (PERT) Computations. • PERT Computations • Cost Consideration in Project Scheduling • Determination of the Floats • Practice problems.
Week 9	Mid Exam
Week 10	**Chapter 3: Decision Theory**:- • Introduction • Basic Definitions • Decision Making Under Certainty
Week 11	• Decision Making Under Risk • The expected value of perfect information • Decision Trees • Practice problems
Week 12	**Chapter 4: Inventory Models:-** • Introduction • Why hold inventory • The cost of Inventory • Deterministic Models
Week 13	• Purchasing Model With No Shortages • Purchasing Model With Shortages (The Backorder Model) • Manufacturing Model with no Shortage • Quality Discount Mode • Practice problem

Week 14	**Chapter 5: Game Theory:-** • Introduction • Definitions , Player, Strategy, Pure Strategy, Mixed Strategy , Payoff, Payoff Matrix • Two-Person Zero-Sum Game With Saddle Point • Reduce Game by Dominance • Mixed Strategies (2 X 2 Games) • Mixed Strategies (2 X M) and (M X 2) Games • Graphical Method • Practice problems.
Week 15	**Review**
Week 16	**Final Exam**

Module Aims, Learning Outcomes and Indicative Contents

Module Objectives	**The main objective of this course is to give student a good theoretical and practical knowledge of operations methods. The student will take courses from a variety of technique that focus extensively on statistical methodology, mathematical modeling, and computer implementation issues.** **The student will be able to solve and interpret correctly the solutions of a problems and recognize the situations where OR techniques can be used as decision making tools and to interpret correctly the conclusions which can be derived using these techniques.**
Module Learning Outcomes	At the end of this course the student will:- 1. Understand and be able to construct CPM/PERT techniques to a set of activities. 2. Learn how to deal with the problems arising due decision making under certainty, under uncertainty and under risk. 3. Learn how to deal with the game theory. 4. Understand and be able to deal with the inventory models.

Learning and Teaching Strategies

Strategies	Contact hours: 2 theoretical weekly hours + Assignments

Module Evaluation

Assessment Types		Time/Number	Weight (Marks)	Week Due	Relevant Learning Outcome
Formative assessment	**Quizzes**	12hrs. /3	15	4,7,12	
	Assignments	6hrs. /6	10	3,5,10,11,12, 13	
	Report	5hrs. /1	5	6	
	Presentation		5%		
Summative assessment	**Midterm Exam**	18 hrs. /1	20%	8	
	Final Exam	30 hrs. /1	50	16th	
Total assessment			100% (100 Marks)		

Learning and Teaching Resources

	Text	Available in the Library?
Required Texts	1. Text books: Hamdy, A.Taha; Operations Research an Introduction, 8th Edition, Pearson Education Inc., 2007.	
Recommended Texts	2. Reference books: Gupta, P. K. & D. S. Hira; Operations Research, 2nd Edition,S. Chand & Company (Pvt) Ltd, Ram Nagar, New Delhi, 1987.	
Websites		

Grading Scheme
مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A - Excellent**	امتياز	90 – 100	Outstanding Performance
	B - Very Good	جيد جدا	80 – 89	Above average with some errors
	C - Good	جيد	70 – 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 – 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 – 59	Work meets minimum criteria

Fail Group (0 – 49)	FX – Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.

- ➢ **Cycle of studies - choose one of the three options: Bachelor «1», Master «2», PhD. «3»**
- ➢ **(<u>Exam</u>: Oral Examination, Written Exam), and (<u>Continous Evaluation</u>(CE), Portfolio).**
- ➢ **Discipline status (Content) - for the Bachelor level, choose one of the options: FD (Fundamental (General) Discipline), PF (Preparatory Disciplines in the Field), SD (Specialty Disciplines), CD (Complementary Disciplines), DU (Disciplines based on the University's options).**
- ➢ **Discipline status (compulsoriness) - choose one of the options**
  - a. MD (Mandatory discipline)
  - b. OD (Optional Discipline)
  - c. ED (Elective (Facultative) Discipline).

Approved by Head of the Branch / Department

Signature	
Date	
Name	

Approved by Curriculum Development Committee and Bologna Process Committee

Signature	
Date	
Name	