



# Course Specification

— (Bachelor)

Course Title: **GAME THEORY**

Course Code: **MTHS 412**

Program: **APPLIED STATISTICS AND DATA MANAGEMENT**

Department: **MATHEMATICS**

College: **SCINCE - ZULFI**

Institution: **MAJMAAH UNIVERSITY**

Version: **2023**

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## A. General information about the course:

### 1. Course Identification

<b>1. Credit hours: ( 2 )</b>					
<b>2. Course type</b>					
A.	<input type="checkbox"/> University	<input type="checkbox"/> College	<input checked="" type="checkbox"/> Department	<input type="checkbox"/> Track	Others
B.	<input type="checkbox"/> Required		<input checked="" type="checkbox"/> Elective		
<b>3. Level/year at which this course is offered: (7<sup>th</sup> level / 4<sup>th</sup> year)</b>					
<b>4. Course general Description:</b>					
<b>5. Pre-requirements for this course (if any):</b>					
MTHS 122					
<b>6. Co-requisites for this course (if any):</b>					
None					
<b>7. Course Main Objective(s):</b>					
Introduction of Linear Programming, Game, Payoff Matrix, Players, Strategies					
Pure Strategies Method , Minimax and Maxmini strategy, saddle point					
Mix Strategies Method, Probabilities of game, Odd method					
Dominance method for value of game, Graphical Method for value of game					
Dominant strategy with examples					
Equilibrium strategies, examples					

### 2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	30	67%
2	E-learning	15	33%
3	Hybrid <ul style="list-style-type: none"> <li>Traditional classroom</li> </ul>		





No	Mode of Instruction	Contact Hours	Percentage
	• E-learning		
4	Distance learning		

### 3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	15
5.	Others (specify)	
<b>Total</b>		<b>45</b>

## B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
<b>1.0</b>	<b>Knowledge and understanding</b>			
1.1	Acquire and outline mathematical knowledge and skills	K1	<ul style="list-style-type: none"> <li>Lectures/Presentations</li> <li>Media Lectures</li> <li>Tutorials</li> </ul>	<ul style="list-style-type: none"> <li>Exam</li> <li>Assignment</li> <li>Quiz</li> <li>Final Exam</li> </ul>
1.2				
<b>2.0</b>	<b>Skills</b>			
2.1	Demonstrate the work independently and within a team	S1	<ul style="list-style-type: none"> <li>Lectures/Presentations</li> <li>Media Lectures</li> <li>Tutorials</li> </ul>	<ul style="list-style-type: none"> <li>Exam</li> <li>Assignment</li> <li>Quiz</li> <li>Final Exam</li> </ul>
2.2				
<b>3.0</b>	<b>Values, autonomy, and responsibility</b>			
3.1				
3.2				





Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
3.4	Show the ability for decision making	V4	<ul style="list-style-type: none"> <li>Group discussion</li> </ul>	<ul style="list-style-type: none"> <li>Exercise</li> <li>Electronic MCQ Test</li> </ul>

### C. Course Content

No	List of Topics	Contact Hours
1.	Introduction of Linear Programming, Game, Payoff Matrix, Players, Strategies	9
2.	Pure Strategies Method , Minimax and Maxmini strategy, saddle point	9
3.	Mix Strategies Method, Probabilities of game, Odd method	9
4.	Dominance method for value of game, Graphical Method for value of game	9
5.	Dominant strategy with examples	6
6.	Equilibrium strategies, examples	3
<b>Total</b>		<b>45</b>

### D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	First Mid Term Exam	6 <sup>th</sup> week	15%
2.	Quizzes	Every 2 week	15%
3.	Assignments	Every 2 week	5%
4.	Class Activities	2 time in semester	5%
5.	Electronic Test	One time in semester 10 week	5%
6.	Second Mid Term Exam	12 <sup>th</sup> week	15%
7.	Final	After 10 <sup>th</sup> week	40%
<b>Total</b>			<b>100%</b>

\*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

### E. Learning Resources and Facilities

#### 1. References and Learning Resources

##### Essential References

M. D. Taha, Operation Research.





<b>Supportive References</b>	MIT open courses
<b>Electronic Materials</b>	MIT Open Courses
<b>Other Learning Materials</b>	1) <a href="https://www.wolfram.com/mathematica/">https://www.wolfram.com/mathematica/</a> MS Excel (365 MS word)

## 2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	<ul style="list-style-type: none"> <li>- The size of the room should be proportional to the number of students</li> <li>- Provide enough seats for students.</li> <li>- The number of students not exceed on 30 in the classroom</li> </ul>
Technology equipment (projector, smart board, software)	<ul style="list-style-type: none"> <li>- Mathematics Lab is equipped with a computer.</li> <li>- Provide overhead projectors and related items i.e smart Board, Wi-Fi, AV.</li> <li>- Updated Math Software i. e Mathematica, Matlab, Maple. MS word</li> </ul>
<b>Other equipment</b> (depending on the nature of the specialty)	

## F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students/ internal committee	Direct (Students evaluation electronically organized by Deanship of registration and admission)/ Verification of students' papers
Effectiveness of students assessment	Staff members (Peer Reviewer)	Indirect (Frequent meetings consultation among the teaching staffs)
Quality of learning resources	Staff members (course coordinators)	Direct (Meeting between course coordinators and the tutors)
The extent to which CLOs have been achieved		
Other		

**Assessors** (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify))

**Assessment Methods** (Direct, Indirect)

## G. Specification Approval

**COUNCIL /COMMITTEE**





REFERENCE NO.

DATE

