University of Kerala

Discipline	Mathematics				
Course Code	UK2DSCMAT107				
Course Title	Mathematics for Social Sciences - II				
Type of Course	DSC				
Semester	II				
Academic Level	100-199				
Course Details	Credit	Lecture per week	Tutorial per week	Practical	Total Hours per week
	4	4	-	-	4
Pre-requisites	1.Knowledge of functions, particularly, demand functions, revenue functions and cost functions				
Course Summary	This course includes Differential calculus, its applications in matrix theory and game theory				

Detailed Syllabus

Module	Unit	Contents	Hrs
I	**Basics of Differentiation**		**12**
	1	One variable Differentiation, Basic Definition, Process of differentiation, Rules of differentiation, Some Standard rules (without proof)	
	2	Derivative of higher order with simple problems involving polynomial functions(except trignometric and logarithmic functions)	
	Chapter 6: 6.3, 6.4, 6.5 of Text [1].		
II	**Applications of Derivatives**		**12**
	3	Sign of differential coefficients, Second derivative and nature of curve, Maximum and minimum value of a function, Order Condition for maximum-minimum extreme values.	
	Chapter 6: Sections 6.3, 6.4, 6.5, of Text [1]		

Module	Unit	Contents	Hrs
III	**Matrices**		**12**
	4	Addition, subtraction of Matrices, matrix multiplication, transpose of a matrix properties of transpose of a matrix	
	5	determinants, inverse of a matrix (cofactor method only)	
	Chapter 5: Sections 5.1, 5.2, 5.3, 5.5, 5.6, 5.7, 5.10 and 5.13 of Text [1]		
IV	**Game Theory**		**12**
	6	Basic concepts of Game theory Classification and Description of games Pay-off matrix,	
	7	Saddle point solutions (Strictly Determined Games)	
	Chapter 20: Sections 20.1, 20.2, 20.3, 20.4 of Text [1]		
V	**Suggestions for teacher designed module**		**12**
	For internal assessment examinations only.		
	8	Applications of simple derivatives: Differential Coefficient and elasticity of demand Some special form of square matrices	
	The topics can be found on Chapter 7: Section 7.1 of Text [1] and Chapter 5: Section 5.15 of Text [1]		

Textbook

1. B.C. Mehta, G.M.K. Madnani, Mathematics for Economics. Sultan Chand & Sons, 1976.

References

1. Agarwal B.M, Business Mathematics and Statistics, Vikas Publishing House,New Delhi, 2009.

2. Allen, R.G.D. , Mathematical Analysis for Economists. New Delhi: AITBS Publishers, 2008.

3. Yamane, Taro., Mathematics for Economists: An Elementary Survey. New Delhi: Prentice Hall of India, 2012.

Course Outcomes

CO No.	Upon completion of the course the graduate will be able to	PO/PSO	Cognitive Level	Knowledge Category	Lecture(L) Tutorial (T)	Practical (P)
CO 1	Understand the concepts of derivatives, Maxima-minima	PSO1	R, U	F,C	L	
CO 2	Apply the concepts of differentiation in real life situations	PSO3, 5	Ap	C	L	
CO 3	The basic concepts of matrices	PSO3	U	P	L	
CO 4	The basic concepts of game theory	PSO1, PO1	U	F,C	L	

(R-Remember, U-Understand, Ap-Apply, An-Analyse, E-Evaluate, C-Create)
(F-Factual, C-Conceptual, P-Procedural, M-Metacognitive)

Mapping of CO with PSOs and POs

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	-	-	-	-	-	2	2	1	3	3	2	1	3
CO2	-	-	3	-	3	-	2	3	1	-	-	-	-	1
CO3	-	-	3	-	-	-	3	3	3	2	3	2	1	3
CO4	3	-	-	-	-	-	3	2	-	-	2	1	-	-

(- -Nill, 1-Slightly/Low, 2-Moderate/Medium, 3-Substantial/High)

Assessment Rubrics

- Quiz/Assignment/Discussion/Seminar
- Midterm Exam
- Final Exam

Mapping of COs to Assessment Rubrics

	Internal Examination	Assignment	Project Evaluation	End Semester Exam
CO1	✓	✓		✓
CO2	✓	✓		✓
CO3	✓	✓		✓
CO4	✓	✓		✓