University of Kerala

Discipline	Mathematics				
Course Code	UK3DSCMAT209				
Course Title	Mathematics in Social Sciences - III				
Type of Course	DSC				
Semester	III				
Academic Level	200-299				
Course Details	Credit	Lecture per week	Tutorial per week	Practical	Total Hours per week
	4	4	-	-	4
Pre-requisites	Basic knowlegde of differential calculus				
Course Summary	This course include Integral calculus, Partial Differentiation and Differential equations.				

Detailed Syllabus

Module	Unit	Contents	Hrs
I		**Integral Calculus**	**12**
	1	Simple integration, Basic Definition, basic rule of integration, standard results	
	2	Methods of integration (substitution method only with simple problems), integration by parts (except trigonometeric functionss and logarithmic functions)	
	3	Definite integral, Properties of definite integrals (without problems)	
	Chapter 12: Sections 12.1, 12.2, 12.3, 12.4, 12.5 and 13.3 of Text[1]		
II		**Partial Differentiation**	**12**
	4	Partial derivatives- Technique of partial differentiation, partial differentiation of second order Cross partial differentiation	
	5	Partial derivatives of functions of more than two variables, Maxima and minima of a functions of two variables	

Module	Unit	Contents	Hrs
	Chapter 8: Sections 8.2, 8.3, 8.4, 8.5, 8.10 of Text [1]		
III	**Differential Equations I**		**12**
	6	Definition, Kinds of differential equations, order of differential equation, degree of differential equation, solutions of differential equation.	
	7	Variable separable form, general first order linear differential equation	
	Chapter 14: Sections 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.10, of Text[1].		
IV	**Differential Equations II**		**12**
	8	Linear differential equation with constant Coefficients	
	9	Second order linear differential equations with constant coefficients	
	10	Rules for obtaining particular integral (involving e^x only)	
	Chapter 14: Sections 14.11, 14.12 of Text[1]		
V	**Suggestions for teacher designed module**		**12**
	For internal assessment examinations only.		
	11	Applications of definite integrals, Capital Formaion, compound interest. Application of parial derivatives in Economics. Maxima and minima under given condition (Constrained extreme values) use of Lagrange multiplier first order condition Applications of differential equations: Harrold-Domar model, Domar model.	
	These topics can be found in Chapter 13: Section 13.4, 13.5, 13.6. Chapter 8: Section 8.6, 8.12, Chapter 15: Section 15.3 (A and B) of Text[1]		

Texts

Text 1 B. C. Mehta, G. M. K. Madnani, *Mathematics for Economists*, Sultan Chand & Sons, 2008.

Textbook

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

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

Ref. 3 Yamane, Taro, *Mathematics for Economists: An Elementary Survey*, Prentice Hall of India, New Delhi, 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 integration, Definite integrals and partial derivatives	PSO1, PO1, 3, 8	U	F, C	L	
CO 2	Solve different types of differential equations	PSO3, PO1, 2, 3, 8	U, E,	P, C	L	
CO 3	Applications of differential equations in Domar's models	PSO5, PO1, 2, 3, 4, 5, 6, 7, 8	Ap	C, M	L	
CO 4	Analyse different types of diferential equations	PSO2, PO1, 2, 3, 7	An	C, P	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
CO1	3	-	-	-	-	-	3	-	1	-	-	-	-
CO2	-	3	3	-	-	-	1	3	3	-	-	-	-
CO3	-	-	-	-	3	-	2	2	3	2	3	2	1
CO4	-	3	-	-	-	-	2	2	3	-	-	-	1

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

Assessment Rubrics

- Quiz/Assignment/Discussion/Seminar
- Midterm Exam

- Programming Assignments
- Final Exam

Mapping of COs to Assessment Rubrics

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