PARVATHANENI BRAHMAYYA
SIDDHARTHA COLLEGE OF ARTS & SCIENCE
Autonomous
Siddhartha Nagar, Vijayawada–520010
Re-accredited at 'A+' by the NAAC

23ECMAL122: MATHEMATICAL METHODS FOR ECONOMICS

Offered to: B.A. Honours (Economics) **Course Type:** Major 4 (Core -TH)

Year of Introduction: 2023-24 **Year of offering: 2023 - 2024**

Semester: II 75 Hrs. **Credits: 4**

Course Code-23BAMAL122

Course Objective: This course is to provide basic understanding about mathematical methods relevant to economics and skills to apply them in understanding various economic issues

Course Learning Outcomes:

After studying this course, the student shall be able to

CO1: Explain the basics of sets, functions and their graphical representation

CO2: Learn the rules of differentiation and apply the same to economic problems

CO3: Learn and use maxima and minima to Optimization problems in economics

CO4: Apply rules of integration to estimate the size of consumers' and producers' surplus

CO5: Solve the economic problems through the application of the Matrix Theory

CO-PO MATRIX							
COURSE CODE	CO-PO	PO1	PO2	PO3	PO4	PO5	PO6
23ECMAL122	CO1	0	1	0	0	0	0
	CO2	0	2	0	0	0	0
	CO3	0	1	0	0	0	0
	CO4	0	2	0	0	0	0
	CO5	0	1	0	0	0	0

Unit 1: Sets & Functions

- Role of Mathematical Methods in Economics
- Sets: Types, Operations
- Functions: Meaning, Types, Graphical Representation, Applications in Economics.

Unit 2: Differential Calculus

- Limits of Functions; Continuity and Differentiability of a Function
- Derivative of a Function; Rules of Differentiation
- First and Second Derivatives and their Interpretations; Partial Derivatives
- Applications of Derivatives in Economics

Unit 3: Optimization Problems and their Applications

- Concept of Optimization in mathematics; Problems of Maxima and Minima
- Unconstrained & Constrained Optimization
- The Method of Lagrange Multipliers
- Some Applications of Optimization in Economics

Unit 4: Integrations and Linear Programming

- Concept of integration; Simple Rules of Integration
- Application of Integrations in Economics
- Linear Programming: Basic Concept, Formulation of Problem; Feasible, Basic and Optimal Solutions
- Applications of Liner Programming in Economics

Unit 5: Matrices and Determinants and Applications in Economics

- Matrix: Concept, Types; Matrix Operations: Addition, Multiplication 10
- Determinants, Inverse of a Matrix
- Solution to the System of Simultaneous Equations, Cramer's Rule
- Some Applications of Matrix Theory in Economics

Text book : D. Bose : An introduction to Mathematical Economics, Himalaya publishing House

References:

1. Alien, R.G.D. (1974), Mathematical Analysis for Economists, Macmillan Press and ELBS, London.
2. Chiang, A.C. (1986), Fundamental Methods of Mathematical Economics, McGraw Hill, New York.

3. Open Source Online Materials & Videos: IGNOU, e-PG Pathasala, SWAYM, Khan Academy etc.Suggested

Activities:

Unit-1: Assignments on solving sets and modeling various functions

Unit-2: Exercises on solving differential equation and their application in economics

Unit-3: Board Presentation by students in solving the optimization problems related to economics
Unit-4: Task Based Learning (TBL) for solving and application of the liner program models with economic examples

Unit-5: Group Projects on solving matric problems, submit report and make presentation