

Name of the Programme: M. A. Economics

Course Code: ECO-504

Title of the Course: Mathematics for Economic Analysis

Number of Credits: 4

Effective from AY: 2022-23

<u>Prerequisites for the course:</u>	Graduate in any discipline	
<u>Objective:</u>	To learn the mathematical tools and concepts that aid in analysing economic optimisation.	Contact Hours
<u>Content:</u>	Module 1: Vectors and Matrices Vectors, Vector Spaces, Linear Dependence, Basis. Elementary operations with Matrices, Equivalence, Determinants, Inverse of Matrix, Rank of a Matrix, Cramer's Rule. Introduction to Input-Output techniques. Module 2: Set Theory: Sets, Set operations, Finite and Infinite Sets, Non-denumerable sets, Cartesian Product, Relations, Functions, Ordered Sets, Linear Point Sets. Functions & Limits: Limit of a function, continuity, Necessary and sufficient conditions. Module 3: Differentiation: Rules of differentiation: Total derivatives and Partial derivatives. Maxima and minima, points of inflexion. Integration: Reimann integral, Fundamental Theorem of the calculus, Techniques of integration and Definite integrals. Applications in economics: Theory of the firm (cost) & Growth Module 4: Optimisation: Unconstrained & Constrained Application to economics: cost curves, demand curves, Theory of the consumer and Theory of the Firm under Perfect and Imperfect Competition.	15 15 15 15

<u>Pedagogy:</u>	● Chalk and talk aided by ICT enabled lectures ● PC lab exercises ● Assignments and presentations ● Group activity ● MOOC (or similar) Component	
<u>References/ Read ings</u>	Core reading C1. K. Sydsaeter, P. Hammond, Strom and Carvajal (2018), Essentials of Mathematics for Economics Analysis, Pearson. Fifth Edition Additional References A1. Simon, Carl P. & L. Blume (2018) Mathematics for Economists W.W. Norton, New York A2. A.C. Chiang and K. Wainwright (2017) Fundamental Methods in Mathematical Economic McGraw Hill, New York	
<u>Learning Outcomes</u>	Solve problems involving optimisation in Microeconomics including Utility and Production theory	