

MATHEMATICS FOR ECONOMICS

Program Name	B.A. in Economics	Semester	Third Semester
Course Title	Mathematics for Economics		
Course Code:	BA3- ECOCT6	No. of Credits	3
Contact hours	42 Hours	Duration of SEA/Exam	2 Hours
Formative Assessment Marks	40	Summative Assessment Marks	60

Course objectives:

1. Improve the mathematical skills necessary to study economics
2. Identify, solve and interpret the characteristics of each family of functions: linear, polynomial, exponential, logarithmic and quadratic
3. To understand economic functions of demand and supply using mathematical equations.

Course Outcomes (COs): After the successful completion of the course, the student will be able to:

- CO1. Perform Basic operations in Sets and functions and Matrix algebra.
- CO2. Calculate limits, derivatives of Economic functions and identify the nature of relationship.
- CO3. Calculate maxima and minima of function

Contents	42 Hrs
Unit-1: Preliminaries	12 Hrs
Chapter:1 - Introduction to Mathematical Economics: Nature and scope of mathematical economics- Role of mathematics in economic theory	4
Chapter:2 - Number system and Set theory: Types of Numbers: Natural Number, Real number, integers, Irrational Number, Complex Number. Concepts of sets- meaning –types- union of sets– interaction of sets.	4
Chapter:3 - Functions: Meaning of function- Types of functions: Linear and Non-linear Functions; Quadratic, Polynomial, Logarithmic and Exponential functions	4
Unit -2: Economic Functions, their Application and Matrices	14 Hrs
Chapter 4 Economic Functions: Demand Function, Supply function, Production function, Cost, Revenue and Profit function, Consumption function	4
Chapter-5: Applications of Functions: Graph of Economic Functions, Market equilibrium; Equilibrium price and Quantity, Impact of specific tax and subsidy on market equilibrium	5
Chapter-6: Matrices: Definition and Types of Matrices- Matrix Operations: Addition, Subtraction and Multiplication, Transpose of a Matrix, Determinants of Matrix- Cramer’s Rule	5

Unit -3: Differential Calculus and Its Applications	16 Hrs
Chapter 7- Limits: Limits of functions, differentiation, rules of differentiation.	4
Chapter 8 - Derivatives of Economic functions: Derivation of Marginal functions from total function-Marginal Production, Marginal cost, Marginal Revenue, Marginal Profit.	6
Chapter 9 - Applications of Derivatives and Higher order derivatives: Elasticity of Demand- Second order derivatives- Maxima and Minima of Economic function.	6

Pedagogy: Classroom lecture, tutorials, Problem solving exercise

Formative Assessment for C1 & C2		
Assessment Occasion/ type	Marks	
	C1	C2
Internal Test	10	10
Assignment/Seminar	05	
Quiz	05	
Case study / Field work / Project work/ Industrial Visit and Prepare a report	-	10
Total	40 Marks	
<i>Formative Assessment as per NEP guidelines are compulsory</i>		

References	
1	Chiang, A. C. and Wainwright, K., “Fundamental Methods of Mathematical Economics”, McGraw-Hill/Irwin, 4th Edition, 2005.
2	Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.
3	Allen R.G.D., (2015) Mathematical Analysis for Economists, Macmillan.
4	Bose D., (2003) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.
5	Dowling, E. T., “Introduction to Mathematical Economics”, McGraw-Hill, 2001.
6	Hoy, M., Livernois, J. McKenna, C, Rees, R. and Stengos, T., “Mathematics for Economics”, MIT Press, 3rd Edition, 2011
7	Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4th Edition, 2002.

8	Veerachamy R., (2005) Quantitative Methods for Economics, New Age International Publishers, Private Ltd. New Delhi.
9	Yamane Taro, (2002) Mathematics for Economists -An Implementer Analysis, Phi Learning Publishers.