

Course Title: Mathematics and Statistics for Economics

Course Code: 106

- 1) Arithmetic Progression, Geometric Progression and Harmonic Progression General Formula, n th term, Sum of first n terms, Characteristics **(6 hours)**

- 2) Trigonometry: Trigonometric Ratios, Signs of Trigonometric Ratios, Trigonometric Ratios of Compound Angles, Inverse Trigonometric Ratios and their properties **(8 hours)**

- 3) Determinants and Matrices: Determinants, Solution of Two Simultaneous Equations by Determinants, Higher Order Determinants, Minor and Co-factor, Cramer's Rule for Three Linear Equations in three unknowns, Elementary Algebra of Matrices, types of matrices, Rank of a Matrix, Inverse of a Matrix, Application of Matrices to Linear Systems. **(6 hours)**

- 4) Functions and Limits: Functions, Explicit and Implicit Functions, Graphs of Functions Value of a Function at a Point, Odd and Even Functions, Algebra of Functions, Periodic Functions, Logarithmic and Exponential Functions, Limits, Theorem on Limits of Functions, Limits and Continuity of Functions. **(7 hours)**

- 5) Graphs: Co-ordinate System, Plotting of Points in the Co-ordinate System, Equation of a line in slope intercept form, Two intercept form Plotting graphs of Linear Equations, Quadratic Equations, Exponential Equations, Solution of a linear equation in two unknowns using the graphical method. **(6 hours)**

STATISTICS:

- 1) Measures of Central Tendency: Average, Arithmetic Mean, Geometric Mean, Harmonic Mean, Quadratic Mean or the Root Mean Square, Median, Median and Quartiles, Mode, Some Limitations of Measures of Central Tendency. **(6 hours)**

- 2) Dispersion, Descriptive Measures, Expectations: Measures of Dispersion, Range, Quartile Deviation, Mean Deviation, Variance, Moments of Distribution, Expectation of Expected Value. **(8 hours)**

- 3) Probability: The Concept of Probability, Definitions related to Probability, Different Approaches, Conditional Probability, Fundamental Laws, Random Experiment, and Experience. **(7 hours)**

- 4) Index Numbers: Meaning and Types of Index Numbers, Price Index Numbers, Cost of Living Index Numbers or Consumer Price Index Numbers, Some Index Formulae with

Systematic Weights ,Laspeyre's (L) and Paache's Numbers,Change of Base Period, Comparison of Costs of Production of Two Firms, Tests of Index Number Formulae and Uses of Index Numbers . **(6 hours)**

Recommended books

Gupta, S.C. and V.K. Kapoor,. *Fundamentals of Applied Statistics*

Mehta, B.C. and G.M.K. Madnani. *Mathematics for Economists*

Monga, G.S. *Mathematics for Management and Economics*

Nagar, A.L. and R.K. Das . *Basic Statistics*

Speigal, M.R. *Theory and Problems of Statistics*

Kapoor. V.K, *Business Mathematics*