



HERAMBA CHANDRA COLLEGE
DEPARTMENT OF MATHEMATICS

Semester: I
Core Course: Microeconomics & Statistics-I
Paper Code: GE 1.1 Chg

Programme	B.Com
Course Code	GE 1.1 Chg
Course Name	Statistics-I
Year and Semester	1 st year 1 st semester
Prerequisite Course	Nil
Course Objective	To develop an understanding of mathematics & statistics

Total Marks: 100 [Theory (Th) 40 + Internal Assessment 10+Attendance: 10] Total Credits =6 , No. of Lecture hours (Theory): 40

Units of the Course	Content	Lecture No	Faculty
<u>Unit-1</u>	Fundamentals:Definition of Statistics, Scope and limitation of Statistics,Attribute and variable,Primary and secondary data, Method of data collection, Tabulation of data, Graphs and charts, Frequency distribution, Diagrammatic presentation of frequency distribution	8	SR, AM, SG
<u>Unit-2</u>	Measures of Central Tendency:Meaning of central tendency, Common measures – mean (A.M., G.M., H.M.) median and mode, Partition values- quartiles, deciles and percentiles, Applications of different measures	8	SR, SG, DH, AM
Unit -3	Measures of Dispersion:Meaning of dispersion,Common measure– range, quartile deviation, mean deviation and standard deviation; Relative measures of dispersion,Combinedstandard deviation,Applications of different measures.	8	AM, MD, SG
Unit - 4	Moments, Skewness and Kurtosis: Different types of moments and their relationships, Meaning of skewness and kurtosis, Different measures of skewness, Measure of kurtosis,Applications of different measures.	8	AM, SG



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Unit-5	Interpolation: Finite differences, Polynomial function, Newton's forward and backward interpolation formula, Lagrange's interpolation formula.	8	AS, AM, SR

Semester –III (July to December)

Core Course –Business Mathematics & Statistics

Paper Code: GE 3.3 Chg

Programme	B.Com
Course Code	GE 3.3 Chg
Course Name	Business Mathematics & Statistics
Year and Semester	2nd year 3rd semester
Prerequisite Course	Nil
Course Objective	To develop an understanding of mathematics & statistics

Total Marks: 100 [Theory(Th) 80+ Internal Assessment 10+Attendance: 10] Total Credits=6 , No. of Lecture hours: 80

Section/ Unit of the Course	Content	Lecture No	Faculty
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Unit 1	Permutations and Combinations: Definition, Factorial Notation, Theorems on Permutation, Permutations with repetitions, Restricted Permutations; Theorems on Combination, Basic identities, Restricted Combinations. 2 Set Theory: Definition of set, Presentation of sets, Different types of sets- Null set, Finite and infinite Sets, Universal set, Subset, Power set etc.; Set Operations, Law of algebra of Sets. 3 Binomial Theorem: Statement of the theorem for positive integral index, General term, Middle term, Simple properties of binomial coefficients. 4 Logarithm: Definition, Base and Index of Logarithm, General properties of Logarithm, Common Problems. 5 Compound Interest and Annuities: Simple AP and GP Series, Different types of interest rates, Net present value, Types of annuities, Continuous compounding, Valuation of simple loans and debentures, Problems relating to Sinking Funds.	10	SR,AS,AM,DH,MD
Unit 2	Correlation and Association: Bivariate data, Scatter diagram, Pearson's correlation coefficient, Spearman's rank correlation, Measures of association of attributes. [8 L /8Marks] 7. Regression Analysis: Least squares method, Simple regression lines, properties of regression, Identification of regression lines. [8 L /8Marks] 8. Index Numbers: Meaning and types of index numbers, Problems of constructing index numbers, Construction of price and quantity indices, Test of adequacy, errors in index numbers, Chain base index numbers; Base shifting, Splicing, Deflating, Consumer price index and its uses. [8 L /8Marks] 9. Time Series Analysis: Causes of variation in time series data, Components of time series, additive and multiplicative models, Determination of trend by semi-average, moving average and least squares (of linear, quadratic and exponential trend) methods; Computation of seasonal Indices by simple average, ratio-to-moving average, ratio-to-trend and link relative methods; Simple forecasting through time series data. [8 L /8Marks] 10. Probability Theory: Meaning of probability; Different definitions of probability; Conditional probability; Compound probability; Independent events, Simple	40	SG, AM, SR



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Semester –V (January-June)
Core Course -Advanced Business Mathematics
Paper Code: DSE 5.1 A

Programme	B.Com.
Course Code	DSE 5.1 A
Course Name	Advanced Business Mathematics
Year and Semester	2nd year 3rd semester
Prerequisite Course	Nil
Course Objective	To develop an understanding of mathematics & statistics

Total Marks: 100 [Theory(Th) 40 + Internal Assessment 10+Attendance: 10] Total Credits=6 , No. of Lecture hours: 40

Section/ Unit of the Course	Content	Lecture No	Faculty
Unit 1	Functions, Limit and Continuity: Definition of functions, Classification of functions, Different types of functions(excluding trigonometrical functions), Elementary ideas of limit and continuity through the use of simple algebraic functions	8	AS,AM, SR, DH, MD
Unit 2	Differentiation and Integration: Derivative and its meaning; Rules of differentiation; Geometrical interpretation; Significance of derivative as rate measure; Second order derivatives; Integration as anti-derivative process; Standard forms; Integration by substitution.	8	AS,AM, SR, DH, MD



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Unit 3	Applications of Derivative and Integration: Maximum and minimum values ; Cost function ; Demand function ; Profit function; Increasing and decreasing functions ; Rate measure, Applied problems on Average cost (AC), Average variable cost (AVC), Marginal cost (MC), Marginal revenue (MR), Simple area calculation by integration method.	8	AS,AM, SR, DH, MD
Unit 4	Determinants: Determinants upto third order, Elementary properties of determinants, Minors and co-factors, Solution of a system of linear equations by Cramer's Rule (up to three variables)	8	AS,AM, SR, DH, MD
Unit 5	Matrix: Definition of matrix, Types of matrices, Operations on matrices (addition, subtraction, multiplication), Adjoint of a matrix, Inverse of a matrix , Solution of a system of linear equations by matrix inversion method (up to three variables).	8	AS,AM, SR, DH, MD