BACHELOR OF SCIENCE / BACHELOR OF ART

Syllabus & Structure

B. Sc. (Statistics) (UGSTAT) / B. A. (Statistics) (UGSTAT)

Semester	Course Code	Title of Paper	Credits
I	UGSTAT -101	*Statistical Methods*	2
	UGSTAT -101P	Practical Work	2
II	UGSTAT -102	*Probability, Distribution and Statistical Inference*	2
	UGSTAT -102P	Practical Work	2
III	UGSTAT -103	*Sampling Theory and Design of Experiments*	2
	UGSTAT -103P	Practical Work	2
IV	UGSTAT -104	*Applied Statistics*	2
	UGSTAT -104P	Practical Work	2
V	**Discipline Centric Elective Course**		
	DCESTAT -105	*Advance Statistical Inference*	2
	DCESTAT -106	*Basic Knowledge of Statistical Softwares*	2
	DCESTAT -107	Practical Work	2
VI	**Discipline Centric Elective Course**		
	DCESTAT -108	*Official Statistics*	2
	DCESTAT -109	*Operation Research*	2
	DCESTAT -110	Practical Work	2
	Skill Enhancement Course		
	SBSSTAT-04	*Numerical Methods & Basic Computer Knowledge*	4
		Total Credit	**32**

Note:

In **UGSTAT – 101 Statistical Methods**, the whole earlier SLM of UGSTAT - 01 (Statistical Methods) with additional Block – IV; earlier Block – 1 of UGSTAT – 03 (Correlation Regression and Statistical Inference); shall be used.

In **UGSTAT – 102 Probability, Distribution and Statistical Inference**, the whole earlier SLM of UGSTAT - 02 (Probability and Distribution) with additional Block IV and Block – V; earlier Block – II and III of UGSTAT – 03 (Correlation Regression and Statistical Inference); shall be used. Same as In Block – III (Concept of Probability Distributions) one more unit is needed named Unit – V Sampling Distribution.

In **UGSTAT – 103 Sampling Theory and Design of Experiment**, Block – III is needed one more unit, named Unit III Factorial Experiment.

In **SBSSTAT – 04 Numerical Methods and Basic Comp021ptuer Knowledge**, after some rearrangement, the whole earlier SLM of UGSTAT - 05 (Numerical Methods and Basic Computer Knowledge) with additional Some new Blocks as Block – I and IV shall be used. The rearrangement of blocks are as given bellow

At Present	Earlier
Block 1	
Block 2	Block 1
Block 3	Block 2
Block 4	
Block 5	Block 3
Block 6	Block 4

B.Sc. (Statistics) / B.A. (Statistics)

UGSTAT-101   *Statistical Methods*

BLOCK – I .   Data Collection and Its Representation

Unit-I-   Data Collection and Tabulation :
Meanings, Definitions and Applications of Statistics, Measurements and Scale, Measurements of qualitative data, Methods of data collection, Types of data.

Unit-II-   Representation of Data- I (Diagrammatical representation):
Frequency distribution, Tabulation of data, Diagrammatical Representation of data, Bar diagram, Multiple bar diagram, Divided bar diagram, Percentage bar diagram, Pie chart, Pictogram, leaf chart,

Unit-II-   Representation of Data- I (Graphical representation):
Graphical representation of frequency distribution, Histogram, Frequency polygon, Frequency curve, Ogive.

BLOCK – II .   Measures of Central Tendency and Dispersion

Unit-I-   Measures of Central Tendency :
Types of measures of central tendency, Arithmetic mean, Fundamental Theorems on
Arithmetic mean, Geometric mean, Harmonic mean, Median, Mode, Percentiles, Deciles, and Quartiles.

Unit-II-   Measures of Dispersion :

Types of measures of Dispersion, Range, Mean Deviation, Variance and Standard deviation, Effect of change of origin and scale, Relationship between measures of central tendency and measures of dispersion, Coefficient of variation.

BLOCK – III . Moments, Skewness and Kurtosis

Unit-I-   Moments, Raw Moments and Central Moments :
Definition of moments, raw moments for ungrouped data, raw moments for grouped data, Central moments, Factorial moments, Interrelationship between various moments, effect of change of origin and scale on moments, Charlier's checks, Sheppard''s correction for moments.

Unit-II-   Skewness and Kurtosis :
Definition of skewness, Measures of skewness, Pearson's coefficient, Bowley's coefficients, Kurtosis, Measures of Kurtosis, effect of change of origin and scale.

BLOCK – IV . Correlation and Regression

Unit-I-   Bivariate Data and Correlation:
Scatter Diagram, Karl Pearson's coefficient of correlation, Properties of correlation coefficient, limits of correlation coefficient, Effect of change of origin and scale on correlation coefficient.

Unit-II-   Regression:
Regressions, linear regression model, principal of least square, Regression lines, Regression coefficient, Properties of Regression coefficients.

Unit-III-   Correlation and Intra Class Correlation:
Rank correlation coefficient, Spearman's rank correlation coefficients, rank correlation coefficient for tied ranks, Intra-class correlation, some remarks on Intra-class correlation.

Unit-IV-   Theory of Attributes:
Combinations, Classes and Class frequencies of Attributes, Dichotomous Classification, Consistency of data, joint distribution of attributes, Contingency tables, Independence and Association of Attributes, Measures of Association, Yates Correction.

UGSTAT-102   Probability, Distribution and Statistical Inference

BLOCK – I.   Probability Theory

Unit-I-   Random experiments and Probability:
Deterministic and random experiments, Sample space, Events, Algebra of Events, Axiomatic definition of Probability, Classical definition of Probability, Statistical definition of probability, Addition Theorem of Probability .

Unit-II-   Conditional Probability:

Conditional probability, Multiplicative theorem of Probability, Independent events, Partition of sample space, Baye's Theorem.

BLOCK – II. Probability Distributions and Expectations

Unit-I-   Random Variables and Probability Distributions:
Definition and types of random variable, Cumulative distribution function and its properties, Probability Mass Function, Probability Density Function..

Unit-II-   Expectation:
Definition and types of Mathematical Expectation, Moments in terms of expectation, Mathematical and Multiplication theorems of Expectation, other theorems on expectation.

Unit-III-   Inequalities for Moments:
Cauchy-Schwartz Inequality, Markov's inequality, Chebyshev's inequality.

BLOCK – III.   Concept of Probability Distributions

Unit-I-   Univariate Distributions:
Bernoulli Distribution, Binomial Distribution, mean and variance of binomial distribution, Moments, Moments Generating Function, Additive and Multiplicative property, Recurrence relation for moments, Fitting of Binomial Distribution, Poisson Distribution, Poisson Distribution as a limiting case of Binomial Distribution, mean and variance of Poisson distribution, Moments, Moment Generating Function, Additive and Reproductive property, Recurrence relation for moments, fitting of Poisson Distribution.

Unit-II-   Discreet Distribution:
Geometric Distribution, mean and variance, moment generating function of geometric distribution, Negative Binomial Distribution, Moment Generating Function, Mean and Variance, Recurrence formulae for negative Binomial Distribution, Poisson Distribution as a limiting case of Negative Binomial Distribution, Hyper Geometric Distribution, Mean and Variance, Recurrence relation for Hyper Geometric distribution..

Unit-III-   Normal Distribution:
Normal Distribution and its parameters, Standard Normal Distribution, Moments, Moments Generating Function, Area Property, properties of normal curve, Standard Scores, Advantages and Characteristics of Z Scores.

Unit-IV-   Continuous Distribution:
Uniform Distribution, Moment Generating Function, Distribution Function, Moments of Uniform Distribution, Exponential Distribution, Moments, Moment Generating Function, Lack of Memory Property.

Unit-IV-   Sampling Distribution:

Sampling distribution of a statistic, Parameter, Derivation of χ^2, t, F, z distributions, Beta, Gamma, Chauchy densities.

BLOCK – IV . Basic Principles of Statistical Inference

Unit-I-   Estimation :
Point Estimation, properties of a good estimators, Consistency, Unbiasedness, Efficiency, Sufficiency, Confidence Interval Estimation .

Unit-II-   Method of Estimation:
Procedures of Estimation, Method of Moments, method of Maximum Likelihood, Method of Scoring, Properties of Estimators.

Unit-III-   Testing of Hypothesis:
Statistical Hypothesis, Simple and Composite Hypothesis, Critical Region, Two kinds of Error, One-tailed and Two-tailed tests, Test of Significance, Most Powerful Test, Uniformly Most Powerful Test .

BLOCK – V.   Test of Significance

Unit-I-   Exact Tests and Fisher's transformations:
Tests of Significance based on Chi-Square Distribution, Tests of Significance based on t – Distribution, Tests of Significance based on F – Distribution, Tests of Significance based on Fisher's Z - Distribution.

Unit-II-   Large Sample Tests:
Testing Significance of Mean, Testing Equality of Means, Testing Significance of Proportion, Testing Equality of Proportions, Testing Significance of Standard Deviation, Testing Equality of Standard Deviation.

Unit-III-   Non-Parametric Tests:
Non Parametric Tests, Sign Test, Wilcoxon Signed- Rank Test, Mann- Whitney U-Test, Run Test.

UGSTAT-103   *Sampling Theory and Design of Experiments*

BLOCK – I.   Samplings Theory - I

Unit-I-   Simple Random Sampling:
Advantages of Sampling over Complete Enumeration, Sampling and Non Sampling Errors, Probability or Random Sampling, Bias of an Estimator, Measures of Sampling Error, Simple Random Sampling Without Replacement (SRSWOR) .

Unit-II-   Stratified Random Sampling:
   Introduction, Reasons & Advantages of Stratification, Some theorems**.**

Unit-III-   Allocation of Sample Size and Systematic Sampling:
   Introduction, Equal Allocation, Proportional Allocation, Variance of Stratified Mean under Proportional Allocation, Optimum Allocation, Variance of Stratified Mean under Neyman Allocation, Relationship Among Three Variances, Impact of Arbitrary Allocation, Practical difficulties in Implementing Neyman Alloation, Systematic Random Sampling.

BLOCK – II.   Sampling Theory - II

Unit-I-   Ratio and Regression Methods of Estimation:
   Introduction, Ratio and Regression Estimators, Approximate Variances of the Ratio Estimators

Unit-II-   Cluster and Two Stage Sampling:
   Cluster Sampling (Equal Cluster- Size), Estimation of Mean with SRS at both Stages, Relative Efficiency of Cluster Sampling, Two Stage Sampling, Estimation of Mean, Optimum Allocation when Cost Fixed and when Variance Fixed, Two- Phase (Double) Sampling for Stratification, Estimation of Mean, Difference between Multistage Sampling and Two Phase Sampling.

Unit-III-   Non- Sampling Errors: Response Error and Non Response Errors:
   Introduction, Errors in Sampling, Sampling Errors, Non Sampling Errors, Response Errors, Sources of Non Sampling Errors, Method of Minimizing Non- Response Errors.

BLOCK – III.   Design and Analysis of Experiments

Unit-I-   Analysis of Variance, Design of Experiment and Completely Block Design:
   Analysis of Variance, Linear Models and Analysis of Variance, Design of Experiment, Basic Principles of Design of Experiments, Completely Randomized Design.

 Unit-II-   Randomized Block Design and Latin square Design:
   Randomized Block Design, Efficiency of RBD, Missing Plot Technique, Latin Square Design, and Efficiency of LSD.

Unit-III-   Factorial Experiment:
   Definition, 2^2 and 2^3 factorial experiments with its ANOVA table.

UGSTAT-104   *Applied Statistics*

BLOCK – I .   Index Numbers:

Unit-I-   Index Number: General Theory:

Definition & Construction of an Index number, Price Relatives, Quantity or Volume Relatives, Value Relatives, Link & Chain Relatives, Problem involved in computation of an Index Number .

Unit-II-   Index Numbers: Important Formulae:
Introduction, Calculation of Index Number, Laspeyre's, Paasche's, Marshall- Edgeworth's, fisher's formulae, other indices, Quantity Index, Criteria of good Index Number

Unit-III-   Consumer Price Index Number:
Introduction, Construction & Computation of Consumer Price Index Number (CPI), Steps in construction of CPI, Use & Limitations of CPI, Base Shifting of Index Numbers, Splicing of Index Number Series, Deflating the Index Number, Index of Industrial Production.

BLOCK – II .   Time Series Analysis:

Unit-I-   Time Series:
Introduction, Utility of Time Series Analysis, Component of Time Series, Mathematical Models for Time Series Analysis.

Unit-II-   Determination of Trends:
Introduction, Graphic Method, Method of Semi Averages, Method of Curve Fitting by the Principle of Least Squares, Method of Moving Averages (when Period is Even & Odd).

Unit-III-   Determination of Seasonal Indices:
Introduction, Measurement of Seasonal Indices, Method of Simple Averages, Ratio to Trend Method, Ratio to Moving Average Method, Method of Link Relatives.

BLOCK – III . Demography:

Unit-I-   Sources of Demographic Data :
Introduction, Demography & Vital Statistics, Sources of Demographic Data, Errors in Data Collection, Evaluation & its Adjustments, Rates & Ratios.

Unit-II-   Measures of Mortality:
Introduction, Measures of Mortality, CDR, SDR, StDR, MMR, IMR.

Unit-III-   Measures of Fertility :
Introduction, Measures of Fertility, CBR, GFR, ASFR, TFR.

Unit-IV-   Life Tables:
Introduction, Description & Construction of Complete Life Table, Uses of a Life Table.

Unit-IV-   Measures of Reproductively:
Introduction, GRR, NRR.

BLOCK – IV .   Statistical Quality Control:

Unit-I- **Introduction of Statistical Quality Control :**

Introduction, Advantages of Quality Control, Quality Characteristics, Basic Principles & Operating Characteristics of Control Charts, Choice of Control Limits, Sample Size & Sample Frequency, Rational Subgroups, Analysis of Pattern on Control Charts, Rate of Detection of Change in Average Level.

Unit-II- **Control Charts for Variables:**

Introduction, Control Charts for Mean, Control Charts FDor Range, Con trol Charts for Standard Deviation.

Unit-III- **Control Charts for Attributes:**

Introduction, Control Charts for Fraction Defectives, Control Charts for Number of Defectives, Control Charts for Number of Defects .

Unit-IV- **Principles of Acceptance Sampling:**

Introduction, AQL, LTPD, Producer's Risk, Consumer's Risk, OC Function, AOQ, Average Total Inspection, Average Sample Number, Single Sampling Plan, Double Sampling Plan, Sampling Inspection by Variables.

DECSTAT-105 *Advance Statistical Inference*

BLOCK – I . **Point Estimation**

Unit-I- **Introduction to Statistical Inference:**

Introduction, Parameter & Statistic, Parametric & Non-Parametric Methods, Likelihood Function of Sample Values, Sampling Distribution, Standard Error of the Statistic.

Unit-II- **Point Estimation & Cramer Rao Inequality:**

Introduction, Point Estimation, Properties of Estimators, Unbiasedness, Consistency, Efficiency, MVUE, C-R Inequality.

Unit-III- **Sufficiency & Factorization Theorem:**

Introduction, Sufficiency, Neymam- Fisher Factorization Theorem, Koopmam's form of the Distribution, Invariance Property of Sufficient Statistics.

Unit-IV- **Complete Sufficient Statistics & Rao Blackwell Theorem:**

Introduction, Complete Family of Distributions, Rao-Blackwell Theorem.

BLOCK – II . **MVU Estimation**

Unit-I- **MUV Estimators :**

Introduction, Minimum Variance Unbiased Estimation, Some Theorems on MVUE.

Unit-II-   Complete Sufficient Statistics:
Introduction, Sufficient Statistic & Completeness, Lehmann- Scheffe Theorem, Construction of UMVUE.

BLOCK – III .   Testing of Hypothesis - I

Unit-I-   Preliminary Concepts in Testing:
Introduction, Types of Hypothesis, Types of Error, Critical Region, Power Function.

Unit-II-   MP & UMP Tests :
Introduction, Most Powerful Test, Uniformly Most Powerful Test.

BLOCK – IV .   Testing of Hypothesis -II

Unit-I-   Neyman- Pearson Lemma, Likelihood Ratio Test & Their Uses :
Introduction, Neyman-Pearson Lemma, Likelihood Ratio Test.

Unit-II-   Testing of Means of Normal Population :
Introduction, One Sample Problem, Two Sample Problem.

Unit-III-   Interval Estimation :
Introduction, Confidence Interval & Confidence Coefficient, C.I. For Sample Mean from a Normal Population, C.I. for differences of Means From Two Normal Population.

Unit-IV-   Shortest & Shortest Unbiased Confidence Intervals :
Introduction, Intervals of Shortest Length, Neyman's Principle of Shortest Confidence Interval, Unbiased Confidence Interval, Shortest Unbiased Confidence Interval, Case of Discreet Random Variables.

DECSTAT-106   *Basic Knowledge of Statistical Softwares*

BLOCK – I .   Statistics with MS Office

Unit-I-   MS Office and its components:
About Statistical Softwares, its features and the steps for data analysis with related softwares Introduction to system software and application software, word processing software – Microsoft office Word, spread sheet software – Microsoft office excel, presentation software – Microsoft office Power Point (Interface of all the three application software, file handling, editing, formatting and final output).
Excel as data base software: cell referencing, concept of list, data sorting and filtering, manipulation of data, naming of cells.

Unit-II-   Computation with MS Excel:

Functions specifically Numeric/Mathematical functions, Statistical Functions, Logical Functions, lookup functions, Statistical Analysis using Excel – Descriptive Statistics, Curve fitting, correlation and regression analysis, graphs.

BLOCK – II . Statistical Computation with R

Unit-I-   **Basics of R:**
Basics of R, R Studio and R-Commander, creation of data files. Import Export of Data files, Transformation of Data.

Unit-II-   **Statistical Analysis with R:**
Statistical Analysis using R – Descriptive Statistics, Curve fitting, correlation and regression analysis, graphs.

Unit-III-   **Testing of Hypothesis with R:**
Testing of hypothesis using R.

DECSTAT-108   *Official Statistics*

Block – 1: Official Statistics

Unit – 1: Basics of Official Statistics:
About the official Statistics, Use of Statistics in different offices, Census, National Sample Survey Office, Sample Survey Organization, Birth and Death Registration. etc Introduction to Indian and International statistical systems. Role, function and activities of Central and State statistical organizations. Organization of large scale sample surveys. Role of National Sample Survey Organization. General and special data dissemination systems.

Unit – II: Application of Areas and Tools:
Population growth in developed and developing countries, evaluation of performance of family welfare programmes, projections of labour force and manpower. Scope and content of population census of India. System of collection of Agricultural Statistics. Crop forecasting and estimation, productivity, fragmentation of holdings, support prices, buffer stocks, impact of irrigation projects. Statistics related to industries, foreign trade and balance of payment, cost of living, inflation, educational and other social statistics.

Unit – III: Statistical System and Functions of Various Agencies:
Present official statistical system in India, Methods of collection of official statistics, their reliability and limitations. Principal publications containing data on the topics such as population, agriculture, industry, trade, prices, labour and employment, transport and communications, banking and finance. Various official agencies responsible for data collection and their main functions.

Block – II: Statistical Methods for Total Quality Management

Unit – I: Objectives and Basics of TQM:

Quality Systems, ISO 9000 standards, QS 9000 standards. Concept of six-sigma and the Define-Measure-Analyse-Improve-Control Approach. Precision and accuracy in measurement systems. Estimation of Measurement Uncertainty. Total Quality Management.

Unit – II: Methodologies of TQM:

Process Analysis and Optimization. Quality at Design stage, Quality Function Deployment, Failure Mode and Effect Analysis, Conjoint Analysis. System, parameter and tolerance designs. Planning and analysis of fractional factorial experiments. Basic ideas of response surface methodology and contour plots.

Unit – III: Process Quality and Capability Analysis:

Quality in manufacturing, control charts for attribute and variable characteristics, process adjustments based on control chart evidences. Process capability and performance indices. Evolutionary operations. Measuring customer satisfaction, American Customer Satisfaction Index Model.

DECSTAT-109   *Operation Research*

BLOCK – I.   Formulation of Linear Programming Problems

Unit-I-   Introduction to Operation Research:
Introduction, Phases of OR Problem, Operation Research Modeling Approach, Defining the Problem & Gathering Data, Formulating a Mathematical Models, Deriving Solution from the Model Introduction to Linear Programming, Formulation of a Linear Programming Problem with examples.

Unit-II-   Graphical Method top Solve LPP:
Introduction, Graphical Solution to Linear Programming Problem.

BLOCK – II .   Simplex Method of Solving LPP

Unit-I-   Simplex Method:
Introduction, Principle of Simplex Method, Simplex Method with Several Decision Variables, Two Phase & M-Method, Multiple, Unbounded Solution & Infeasible Problems, Sensitivity Analysis.

Unit-II-   Duality Problem in LPP:
Introduction, Dual Linear Programming Problem, Formulation of a Dual Problem with example.

BLOCK – III .   Transportation Problem & Assignment Problem

Unit-I-   Representation of Transportation Problem (Non-Generated & Balanced Cases only) & Assignment Problem as Linear Programming Problem:

Introduction of T.P. & A.P., Transportation Problem as LPP, Non-Degenerate Transportation Problem, Balanced Transportation Problem, Assignment Problem &LPP, Balanced Assignment Problem.

Unit-II-   Different Methods of Finding Initial Feasible Solution of a Transportation Problem (T.P., MODI Method of Finding Optimal Solution of a T.P.) :
Introduction, Basic Feasible Solution of a Transportation Problem, Modified Distribution Method (MODI), Vogel's Approximation Method (VAM), Maximization in a Transportation Problem .

Unit-III-   Solution of Assignment Problem With using Hungarian Method :
Introduction, Solution of an Assignment Problem, Hungarian Method, Maximization in an Assignment Problem.

BLOCK – IV . Theory of Games

Unit-I-   Basic Concepts of Game Theory :
Introduction, A Game, Pure & Mixed Strategies, Two- Person Zero- Sum Game, Pay-Off Matrix, Games without Saddle Point and Mixed Strategies, Methods of Solving Game Problems.

Unit-II-   Dominance Rule, Equivalence of Rectangular Games with Linear Programming :
Introduction, Rectangular Games without Saddle Point, Dominance Property of reducing the Size of the Game, Solution Methods of Games without Saddle Point, Equivalence of Rectangular Games with Linear Programming.

SBSSTAT – 04   Numerical Methods & Basic Computer Knowledge

BLOCK-I: Solutions of Non-Linear Equations in one Variable

Unit - I: Basic Properties of Equations:
Review of Calculus, Round off Error, Truncation Error, Some properties of equations, Iteration Methods for finding the roots (zero's) of an equation. Convergence Criterion, Initial Approximation to a Root, Bisection Method,

Unit - II: Solutions of Non-Linear Equations:
Fixed Point Iteration Method, Chord Methods for Finding Roots- Regula Falsi   Method, Newton Raphson Method. Order of convergence.

BLOCK – II. Finite Differences

Unit-I-   Finite Differences:
Forward Difference Operator, Difference Table, The Operator E, The Operator D, Backward Differences, Factorial Polynomial, Central Differences, Mean Operator.

Unit-II-   Interpolation with Equal Intervals:
Introduction, Missing Values, Newton- Gregory Forward & Backward Interpolation Formula,

Unit-III-   Interpolation with Un-Equal Intervals:
Introduction, Missing Values, Properties of Divided Differences, Newton's Divided Difference Interpolating Polynomial, Error of the interpolation Polynomial Divided Differences and Derivatives.

Unit-IV-   Lagrange's Interpolation:
Introduction, Lagrange's Interpolating Polynomial, General Error term or Reminder Term, Linear Interpolation, error in Linear Interpolation.

BLOCK – III   Central Differences

Unit-I-   Central Difference Interpolation Formulae:
Introduction, Gauss Forward & Backward Formulae, Stirling's Formula, Bessel's Formula, Bessel's Formula for halves.

Unit-II-   Inverse Interpolation:
Inverse Interpolation by Lagrange's method, method of Successive Approximation, Method of Reversion of Series.

Unit-III-   Numerical Differentiation:
Introduction, Numerical Differential for Equal Intervals, Numerical Differential for Un-Equal Intervals, Approximation Formulae for the Derivative of a Function.

Unit-IV-   Numerical Integration:
Introduction, Trapezoidal Rule, Simpson's One-Third Rule, Simpson's Three-Eighth Rule, Waddle's Rule, Eular-Maculerian Formula.

BLOCK IV: Solution of Differential Equations

Unit - I: Numerical Solution of Ordinary Differential Equations-I:
(first order) by Picard's Iteration Method, Euler's Method, Runge- Kutta Methods- 4th Order.

Unit - II: Numerical Solution of Ordinary Differential Equations-II:
(second order and simultaneous) by Picard's Iteration Method, Euler's Method, Runge- Kutta Methods- 4th Order.

BLOCK – V . Computer

Unit-I-   Introduction to Computer :
Introduction, Characteristics of computer, Historical Evaluation of Computer, Generation of Computers, Classification of computers.

Unit-II- Hardware:
Introduction, CPU, Memory Organization, Input-Output Devices.

Unit-III- System Software:
Introduction, System Software, File Commands, Editing, Commands, Disk Management Commands, Number System

BLOCK – VI . Basics of Computer Programming

Unit-I- Algorithm & Flow Charts :
Introduction, Algorithm, Flow Charts.

Unit-II- Programming Language:
Introduction, Machine Language, Assembly Language & Assembler, High Level Language, Object Oriented Programming, Programming Language Generation..