Teaching plan

Mahavir College Kolhapur

Department of Statistics

Annual Teaching Plan

Academic year 2024-2025 B.Sc. Part-I Semester I Department - Statistics

Subject - Statistics Course -

Paper -I- Descriptive Statistics I

Name of teacher – Ms. Powar Poonam P.

Month-July			Module/Unit	Sub-units planned
Lectures 8	Practicals	Total 8	Unit-1 Introduction to Statistics & Measures of Central Tendency	1. Meaning of primary and secondary data, 2. Basis concept of population and sampling methods. 3. Concept of central tendency.
Month-August				
Lectures 08	Practicals 8	Total 16	Unit -1 Measures of Central Tendency	4. A.M., G.M., H.M., and its properties 5. Partition values: Quartile, deciles and percentiles. 6. Comparison between averages
			Unit-2 Measures of Dispersion	1. Concept of dispersion, 2. Absolute and relative measure of dispersion.
Month-September				
Lectures 8	Practicals 4	Total 12	Unit-2 Measures of Dispersion	3. Definition of variance and standard deviation with its properties 4. Coefficient of variation
			Unit-3 Moments, Skewness & Kurtosis	1. Moments: Raw and central moments. 2. Relation between raw and central moments. 3. Skewness and kurtosis (concept and types).
Month- October – November				
Lectures 6	Practicals 8	Total 14	Unit-4 Theory of Attributes	1. Concept of attributes and some definitions 2. Concept of Consistency 3. Concept of Independence and Association of two attributes. 4. Definition and interpretation of Yule's coefficient of association (Q) and Coefficient of colligation (Y). 5. Relation between Q and Y. Examples

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024-2025 B.Sc. Part-I Semester I Department - Statistics

Subject - Statistics Course -

Paper II - Elementary Probability Theory

Name of teacher – Makandar A.M

Month-July			Module/Unit	Sub-units planned
Lectures 08	Practicals 16	Total 24	Unit-1 Sample space and Events	1. Deterministic and non-deterministic experiments 2. Definitions: Sample space, Event, Types of events 3. Algebra of events
Month-August				
Lectures 09	Practicals 16	Total 25	Unit -1 Sample space and Events	4. Definition of Power set. 5. Symbolic representation of given events and Illustrative examples.
			Unit-2 Probability	1. Apriori definition of probability, Probability model 2. Axiomatic definition of probability 3. Illustrative examples
Month-September				
Lectures 08	Practicals 20	Total 28	Unit-2 Probability	4. Some theorems on probability 5. Definition of probability in terms of odd ratio.
			Unit-3 Conditional Probability& Independence of events	1. Definition of conditional probability, Multiplication theorem of probability 2. Baye's theorem, examples on conditional probability and Baye's theorem. 3. Independence of two events, Pairwise and Mutual Independence for three events. Elementary examples.
Month- October November				
Lectures 12	Practicals 16	Total 28	Unit-4 Univariate Probability Distributions (finite sample space):	1. Discrete random variable, p.m.f. and c.d.f. 2. Properties of c.d.f. 3. Probability distribution of function of random variable. 4. Median and Mode

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024 -2025 B.Sc. Part-I Semester II Department - Statistics

Subject - Statistics Course -

Paper III : DESCRIPTIVE STATISTICS II

Name of teacher – Mr. Pawar A.A

<table>
<tr><td colspan="3">Month- November- December</td><td>Module/Unit</td><td>Sub-units planned</td></tr>
<tr><td>Lectures 09</td><td>Practicals 8</td><td>Total 17</td><td>Unit-1 Correlation</td><td>1. Bivariate Random variable
2. Correlation, Types of correlation.
3. Scatter diagram, its utility.
4. Karl Pearson’s coefficient of correlation
5. Spearman’s rank correlation coefficient</td></tr>
<tr><td colspan="3">Month-January</td><td></td><td></td></tr>
<tr><td rowspan="2">Lectures 9</td><td rowspan="2">Practicals 8</td><td rowspan="2">Total 17</td><td>Unit -2 Regression</td><td>1. Concept of regression
2. Equations of regression lines
3. Regression coefficients and its properties.</td></tr>
<tr><td>Unit-3 Multiple Linear Regression & Multiple and Partial Correlation</td><td>1. Concept of multiple linear regressions.
2. Fitting of regression plane</td></tr>
<tr><td colspan="3">Month-February</td><td></td><td></td></tr>
<tr><td>Lectures 08</td><td>Practicals 4</td><td>Total 12</td><td>Unit-3 Multiple and Partial Correlation</td><td>3. Multiple and partial correlation coefficients and its properties
4. Examples</td></tr>
<tr><td colspan="3">Month- March</td><td></td><td></td></tr>
<tr><td>Lectures 07</td><td>Practicals 4</td><td>Total 11</td><td>Unit-4 Time Series</td><td>1. Meaning, need and utility
2. components of time series</td></tr>
</table>

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024 -2025 B.Sc. Part-I Semester II Department -Statistics

Subject - Statistics Course -

Paper- IV - Discrete Probability Distributions

Name of teacher – Makandar A.M

Month- November -December			Module/Unit	Sub-units planned
Lectures 10	Practicals 20	Total 30	Unit-1 Some Standard Discrete Probability Distributions- I	1. One point and two points distributions 2. Bernoulli Distribution 3. Discrete Uniform Distribution
Month-January				
Lectures 09	Practicals 12	Total 21	Unit -2 Some Standard Discrete Probability Distributions- II	1. Binomial Distribution 2. Hyper geometric Distribution. 3. Binomial approximation to Hypergeometric distribution
			Unit-3 Discrete Distributions: Poisson, Geometric and Negative Binomial Distribution	1. Poisson Distribution 2. Poisson distribution as a limiting case of Binomial distribution, 3. Examples.
Month-February				
Lectures 07	Practicals 16	Total 23	Unit-3 Discrete Distributions: Poisson, Geometric and Negative Binomial Distribution	4. Geometric Distribution: 5. Negative Binomial Distribution
Month- March				
Lectures 12	Practicals 12	Total 20	Unit-4 Bivariate Discrete Probability Distributions	1. Definition of bivariate discrete random variable, p.m.f, and c.d.f., 2. Properties of c.d.f.

Name & Signature of Teacher Ms. A.M.Makandar

Annual Teaching Plan

Academic year 2024 -2025 B.Sc. Part-II Semester III Department -Statistics

Subject - Statistics Course -

Paper V- Probability Distributions I

Name of teacher – Makandar A.M

Month-July			Module/Unit	Sub-units planned
Lectures 13	Practicals 32	Total 45	Unit-1 Continuous Univariate Distributions	1. Definition of the continuous sample space, 2. Continuous random variable (r.v.), p.d.f., c.d.f. and its properties 3. Expectation of r.v., expectation of function of r.v., mean, median, mode, quartiles, variance, harmonic mean, raw and central moments, skewness and kurtosis.
Month-August				
Lectures 13	Practicals 76	Total 89	Unit -1 Continuous Univariate Distributions	4. Transformations of continuous univariate random variables 5. Methods of transformation
			Unit-2 Continuous Bivariate Distributions	1. Definition of bivariate continuous random variable, p.d.f, c.d.f., 2. Expectation, conditional expectation.
Month-September				
Lectures 11	Practicals 56	Total 67	Unit-2 Continuous Bivariate Distributions	3. Transformation of continuous bivariate random variables 4. Jacobin of transformation. 5. Examples and problems.
			Unit-3 Uniform and Exponential Distribution	1. Uniform distribution 2. Exponential distribution
Month- October-November				
Lectures 12	Practicals 64	Total 76	Unit-4 Normal Distribution	1. Normal distribution with parameters μ & σ^2, Standard normal distribution 2. Properties of Normal distribution 3. Numerical examples

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024-2025 B.Sc. Part-II Semester III Department -Statistics

Subject - Statistics Course -

Paper VI - Statistical Methods I

Name of teacher – Powar Poonam P

Month-July			Module/Unit	Sub-units planned
Lectures 12	Practicals 16	Total 28	Unit-1 Multiple linear Regression, Multiple and Partial Correlation (for trivariate data only)	1. Concept of multiple linear regressions. 2. Fitting of regression plane
Month-August				
Lectures 13	Practicals 20	Total 33	Unit-1 Multiple linear Regression, Multiple and Partial Correlation (for trivariate data only)	3. Properties of multiple correlation coefficient 4. Examples.
Month-September				
Lectures 13	Practicals 12	Total 25	Unit-2 Index Number & Official Statistics	1. Meaning and utility of index numbers. 2. Types of index numbers. 3. Laspeyre's, Paasche's and Fisher's index numbers 4. Tests of index numbers. 5. Cost of living index number
Month- October -November				
Lectures 12	Practicals 20	Total 32	Unit-2 Index Number & Official Statistics	6. National and International official statistical system 7. National Statistical Organization

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024 -2025 B.Sc. Part-II Semester IV Department -Statistics

Subject - Statistics Course -

Paper VII- Probability Distributions II

Name of teacher – Makandar A.M

Month-November- December			Module/Unit	Sub-units planned
Lectures 14	Practicals 70	Total 84	Unit-1 Gamma, Beta and Exact Sampling Distributions	1. Gamma distribution 2. Beta distribution of 1st kind
Month-January				
Lectures 14	Practicals 72	Total 86	Unit- 1 Gamma, Beta and Exact Sampling Distributions	3. Beta distribution of 1st kind 4. Chi-Square distribution 5. Student's t- distribution
Month-February				
Lectures 12	Practicals 56	Total 68	Unit-1 Gamma, Beta and Exact Sampling Distributions	6. Snedecor's F distribution. 7. Inter relation between t, F and χ^2
			Unit-2 Introduction to R	1. Creating, listing and deleting the objects 2. Arithmetic and simple functions
Month- March				
Lectures 11	Practicals 64	Total 75	Unit-2 Introduction to R	3. Import and export data. 4. Exploratory data analysis
Month- April				

Name & Signature of Teacher Ms. Makandar A.M

Annual Teaching Plan

Academic year 2024-2025 B.Sc. Part-II Semester IV Department -Statistics

Subject - Statistics Course -

Paper VIII – Statistical Methods II

Name of teacher – Pawar Ajit A.

Month November -December			Module/Unit	Sub-units planned
Lectures 15	Practicals 20	Total 35	Unit-1 Reliability Theory I	1. Binary Systems 2. Reliability of binary System
Month-January				
Lectures 11	Practicals 20	Total 31	Unit-2 Reliability Theory II	1. Ageing Properties 2. Relationship between survival function and hazard function, density function and hazard rate 3. Hazard rate of a series system
Month-February				
Lectures 11	Practicals 12	Total 23	Unit-3 Testing of Hypothesis I	1. Definitions: Population, sample, hypothesis and types of hypotheses, One and two tailed tests 2. Type I and type II errors, level of significance, p-value, Critical region, power of test. 3. Large Sample Tests.
Month- March				
Lectures 12	Practicals 25	Total 37	Unit-4 Testing of Hypothesis II	1. Exact/Small sample tests (based on t, chi-square and F distribution)
Month- April				
Lectures 12	Practicals 16	Total 28		2. Numerical Examples

Name & Signature of Teacher Ms. A.M.Makandar