VIJAYA COLLEGE, R V ROAD, BANGALORE – 560 004

DEAPARTMENT OF STATISTICS

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS, 2024-25 (ODD SEMESTER)

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR/SEMESTER		**2024-25**	**1 Semester B.Sc (SEP)**
DEPARTMENT		**STATISTICS**	
SUBJECT/PAPER		**S101 – Basic Statistics-1**	
MONTH -1			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
AUGUST 2024 (classes begin from 26/8/2024 **1**	1	Introduction to Statistics	N V P
	2	**UNIT 2: UNIVARIATE DATA ANALYSIS** Measures of central tendency: Arithmetic mean,	RP
	3	Properties of AM	RP
	4	weighted mean, median,	RP
2	1	Importance and scope of Statistics	N V P
	2	geometric mean and harmonic mean, their properties, merits and demerits.	RP
	3	Relation between these measures. Quartiles.	RP
	4	Measures of dispersion: absolute measures - range,	RP
3	1	Types of data	NVP
	2	Measures of dispersion: absolute measures - quartile deviation, mean deviation,	RP
	3	Measures of dispersion: absolute measures - standard deviation and their properties	RP
	4	relative measure - coefficient of variation and their properties.	RP
4	1	Primary & Secondary, Method of collection	NVP
	2	Moments – raw and central moments, Relation between them. Skewness and Kurtosis – their measures and properties	RP
	3	Moments – raw and central moments, Relation between them. Skewness and Kurtosis – their	RP

		measures and properties	
	4	Moments – raw and central moments, Relation between them. Skewness and Kurtosis – their measures and properties	RP

MONTH -2			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
1	1	Preparation of Questionnaire and Schedules	N V P
	2	**UNIT 3: BIVARIATE AND TRIVARIATE DATA ANALYSIS** Bivariate Data, Scatter plot .	RP
	3	Curve fitting – Principle of least square, Fitting of linear equation, exponential and geometric curves.	RP
	4	Fitting of exponential and geometric curves.	RP
2	1	Sampling, Need, Importance and Techniques	NVP
	2	Simple linear regression and its properties..	RP
	3	Fitting of linear regression line and coefficient of determination	RP
	4	Correlation,.	RP
3	1	Organisation of data – Classification and Tabulation	NVP
	2	Karl Pearson's correlation coefficient,	RP
	3	Properties of Karl Pearson's correlation coefficient,	RP
	4	DO	RP
4	1	Preparation of blank table and table with numerical values	NVP
	2	Spearman's rank correlation coefficient	RP
	3	Properties of Spearman's rank correlation coefficient	RP
	4	do	RP

MONTH -3			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
1	1	Frequency distribution, need types, numerical example.	NVP
	2	Multiple linear regression (three variables only),	RP
	3	Multiple linear regression	RP
	4	multiple and partial correlation coefficients,	RP
2	1	Frequency density, Relative frequency, Cumulative frequency distributions	NVP
	2	Residual error variance	RP
	3	**PROBABILITY THEORY** Random experiment, trial, sample space and events. .	RP
	4	Classical, empirical and axiomatic approaches to probability – illustrations and applications	RP
3	1	Diagrammatic representation of data, various types their significance and uses	NVP
	2	Basic theorems on Probability	
	3	Do	
	4	DO	
4	1	Graphical Representation, need, uses	NVP
	2	Conditional probability	
	3	independence of events and multiplication rule.	
	4	Total probability rule, Bayes' theorem- applications.	

MONTH - 4			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
1	1	Histogram, Frequency curve and Polygon Stem and Leaf chart	NVP
	2	Conditional probability,	RP
	3	independence of events (theorems)	RP
	4	Total probability rule,	RP
2	1	Graphical location of measures of Central tendency, Dispersion and Partition values	NVP
	2	Bayes' theorem- applications.	RP
	3	Computer software and utility, statistical software,	NVP
	4	Revision of UNIT-2	RP
3	1	Dispersion and Partition values	NVP
	2	Revision of UNIT-2	RP
	3	Revision of UNIT-3	RP
	4	Revision of SEP model paper and previous year QPs	RP
4	1	MS-EXCEL, R Software – advantages, expressions and objects, Functions and arguments, matrices and arrays, factors, data frames, graphs.	NVP
	2	Revision of UNIT-4	RP
	3		
	4		

3 Semester B.Sc (NEP)

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR/SEMESTER	**2024-25**	
DEPARTMENT	**STATISTICS**	
SUBJECT/PAPER	**STATISTICS/STATISTICAL INFERENCE-I**	

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
AUGUST 2024 (classes begin from 26/8/2024 **1**	1	**Discrete distributions:** Negative Binomial - definition through probability mass function, mean, variance,	RP
	2	moments,	RP
	3	m.g.f.,& mean, variance,	RP
	4	Introduction to calculus of one variable	NVP
SEPTEMBER 2024 **1**	1	Negative Binomial - other properties and applications.	RP
	2	Hypergeometric, -definition through probability mass function,	RP
	3	mean, variance,	RP
	4	Continuity and differentiability of a function	NVP
2	1	Hypergeometric, - other properties and applications.	RP
	2	Hypergeometric, - applications.	RP
	3	Hypergeometric, - applications.	RP
	4	Taylor's series expansion	NVP
3	1	Multinomial distribution	RP
	2	**Continuous distributions:** Cauchy, Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.	RP
	3	do	RP
	4	Partial derivatives and its properties	NVP

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
4	1	Definitions of random sample, parameter and statistic,	RP
	2	sampling distribution of sample mean,	RP
	3	Definitions of random sample, parameter and statistic,	RP
	4	Function of several variables	NVP
OCTOBER 2024 1	1	Chi square distribution- mean, variance, moments, mode, additive property.	RP
	2	do	RP
	3	do	RP
	4	Jacobians	NVP
2	1	Student's and Fisher's t-distribution- mean, variance, moments and limiting form of t distribution	RP
	2	Student's and Fisher's t-distribution- mean, variance, moments and limiting form of t distribution	RP
	3	do	RP
	4	Integral calculus – Evaluation of Indefinite integrals	NVP
3	1	Snedecor's F-distribution: mean, variance and mode. Distribution of 1/F.	RP
	2	Do	RP
	3	do	RP
	4	Integral calculus – Evaluation of Definite integrals	NVP

4	1	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution.	RP
	2	do	RP
	3	do	RP
	4	Methods of Integration – Substitution method	NVP
NOVEMBER 2024 **1**	1	**Revision of** Cauchy, Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.	RP
	2	do	RP
	3	**Introduction to simulation**. Generation of random observations from Normal distributions	RP
	4	Methods of Integration – Partial fractions and by Parts	NVP
2	1	Generation of random observations from binomial distribution, simple illustrations.	RP
	2	Generation of random observations from Poisson distribution, simple illustrations	RP
	3	Generation of random observations from exponential distribution, simple illustrations	RP
	4	Multiple Integrals	NVP
3	1	Sequence of series of Real numbers Convergence of sequence and series – Binomial , Exponential	NVP
	2	Revision of question papers	RP
	3	Revision of question papers	RP
	4	Convergence of sequence and series – Examples	

5 Semester B.Sc (NEP) PAPER-5

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR/SEMESTER	**2024-25**	
DEPARTMENT	**STATISTICS**	
SUBJECT/PAPER	**Sampling Theory and Regression analysis (Theory)**	

AUGUST-2024

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
AUGUST-2024 (classes begin from 26/08/2024 **1**	1	Unit 1: Int. To sampling, basic concepts	R P
	2	Unit 2; SRS WR & WOR, basics	R P
	3	UEs of mean	R P
	4	UE of total.	R P
SEPT-2024 1	1	Sampling Vs Complete enumeration	R P
	2	Derivation of sampling variances	R P
	3	Sampling variance continued	R P
	4	Sample size derivation.	R P
2	1	Principal steps in a survey.	R P
	2	Advs. & drawbacks of SRS	R P
	3	Unit3: stratified sampling, need	R P
	4	Sampling and non-sampling errors	R P
3	1	Advs. & limitations	R P
	2	UE of population mean	R P
	3	UE of population total	R P
	4	CI	R P

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
4	1	Variance estr. derivation	R P
	2	Var. Estr. derv, continued	R P
	3	Proportional allocation	R P
	4	optimum allocation	R P
OCT-2024 1	1	Neyman allocation	R P
	2	Comparison & gain in precision	R P
	3	Systematic Sampling: Linear systematic sampling Technique; estimates of population mean and total, variances of these estimates (N=n x k).	R P
	4	do	R P
2	1	Comparison of systematic sampling with SRS and stratified sampling in the presence of linear trend and corrections	R P
	2	do	R P
	3	Merits and demerits of Systematic Sampling	R P
	4	**Unit 4: Simple linear regression:** Assumptions, inference related to regression parameters, standard error of prediction	R P
3	1	tests on intercepts and slopes, extrapolation, diagnostic checks and correction: graphical techniques,	R P
	2	tests for normality, uncorrelatedness, homoscedasticity, lack-of-fit testing,	R P
	3	DO	R P
	4	do	R P

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
4	1	transformations on Y or X (Box-Cox, square root, log etc.), method of weighted least squares, inverse regression.	R P
	2	Do	R P
	3	Do	R P
	4	Revision	R P
NOV-2024 1	1	Revision	R P
	2	Revision	R P
	3	Revision	R P

WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
	4	Revision	R P
2	1	Revision	R P
	2	Revision	R P
	3	Revision	R P
	4		

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR/SEMESTER	**2024-25**	**FIFTH**
DEPARTMENT	**STATISTICS, Paper 6**	
SUBJECT/PAPER	**Statistical Quality Control & Statistical Inference – II**	

MONTH -1

WEEK	DAY	PORTIONS PLANNED FOR 1 HOUR	FACULTY
AUGUST-2024 (classes begin from 26/08/2024 **1**	1	Introduction to SQC	N V P
	2	Aims, Objectives and Significance	N V P
	3	Chance vs Assignable causes	N V P
	4	**Testing of Hypothesis-II**	R P
SEPT-2024 2	1	Process vs Product control	N V P
	2	Control charts, types, significance	N V P
	3	X bar and R chart (constant sample size) Process standards known and unknown	N V P
	4	**Unit-3: Testing of Hypothesis-II**	R P
3	1	X bar and R chart (Variable sample size) Process standards known and unknown	N V P
	2	p chart (Constant sample size and Stabilized chart) Process standards known and unknown	N V P
	3	np chart (Process standards known and unknown)	N V P
	4	***Definition of UMP test, monotone likelihood ratio (MLR) property,***	R P
4	1	c chart (Process standards known and unknown)	N V P
	2	u chart (Process standards known and unknown)	N V P
	3	Statistical background of control charts, Warning and Action limits	N V P
	4	Examples of distributions having MLR property,.	R P

MONTH -2			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
1	1	Process Capability Analysis (PCA)	N V P
	2	Process Capability Ratio (PCR) and its interpretation	N V P
	3	Natural tolerance limits and Specification limits	N V P
	4	***Examples of distributions having MLR property,***	R P
OCT-2024 2	1	Sampling Plans, need, significance	N V P
	2	Single Sampling Plans (SSP), definition and operation	N V P
	3	Various parameters of SSP	N V P
	4	Construction of UMP test using MLR property..	R P
3	1	SSP for attributes	N V P
	2	Derivation of OC, AOQ of SSP and problems	N V P
	3	Derivation of ASN, ATI of SSP and problems	N V P
	4	***UMP test for single parameter exponential family of distributions.***	R P
4	1	Plotting of OC, AOQ, AOQL, ASN, ATI for SSP	N V P
	2	Non parametric or distribution free tests, Significance, advantages and demerits.	N V P
	3	One sample tests – Sign test, Signed Rank test	N V P
	4	UMP test for single parameter exponential family of distributions.	R P

MONTH -3			
WEEK	**DAY**	**PORTIONS PLANNED FOR 1 HOUR**	**FACULTY**
1	1	Test for Randomness (Run test)	N V P
	2	Kolmogrov – Smirnov test	N V P
	3	Two sample tests – Wald Wolfowitz run test	N V P
	4	***Likelihood ratio (LR)tests, LR test for normal***	R P
NOV-2024 2	1	Mann-Whitney U test	N V P
	2	Friedman's H test	N V P
	3	Kruskal – Walli's test	N V P
	4	Likelihood ratio (LR)tests, LR test for normal, exponential	R P
3	1	Revision of previous year QPs	N V P
	2	Revision of previous year QPs	N V P
	3	Revision of previous year QPs	R P
	4	Revision of previous year QPs	R P
4	1	Revision of previous year QPs	N V P
	2	Revision of previous year QPs	N V P
	3	Revision of previous year QPs	R P
	4	Revision of previous year QPs	R P