DEPARTMENT OF STATISTICS ACADEMIC PLANNER & UNITIZATION OF SYLLABUS

ACADEMIC YEAR 2022-23

CLASS : I SEMESTER SUBJECT: Descriptive Statistics

NAME OF THE TEACHER: R.PRAKASH

		Subject Title : **Descriptive Statistics**
Week/Month	**Day**	**Portions Planned for 1 hour**
SEPTEMBER 2022 (classes begin from (12/09/2022)	1	Measures of Central Tendency: Mean, weighted mean,
	2	Median, Mode,
	1	DO
	2	Geometric and harmonic means, properties,
	1	Geometric and harmonic means, merits and limitations
	2	DO
OCTOBER 2022	1	Partition values..
	2	Measures of Dispersion: range, ,
	1	quartile deviation
	2	mean deviation
	1	do
	2	standard deviation, ,
	1	coefficient of variation and their properties
	2	do
	1	DO
	2	DO
NOVEMBER 2022	1	Moments: Raw and central moments, properties
	2	DO
	1	DO
	2	Skewness concept, measures, and properties
	1	DO
	2	DO
	1	kurtosis: concept, measures, and properties
	2	DO

Week/Month	Day	Portions Planned for 1 hour
	1	DO
	2	DO
DECEMBER 2022	1	Analysis of Categorical Data: Contingency table,
	2	independence and association of attributes,
	1	measures of association - odds ratio, Pearson's and Yule's measure.
	2	DO
	1	Do
	2	Multiple linear regression (Three Variables only), Residual variance.
	1	DO
	2	DO
	1	Multiple and partial correlation coefficients.
	2	Multiple and partial correlation coefficients.
	1	REVISION OF QPs
	2	REVISION
	1	REVISION
	2	REVISION
JANAUARY 2022	1	Illustrative examples on above topics
	2	Illustrative examples on above topics
	1	Illustrative examples on above topics
	2	Illustrative examples on above topics
	1	Illustrative examples on above topics
	2	Revision
	1	
	2	
	1	
	2	
	1	
	2	

DEPARTMENT OF STATISTICS ACADEMIC PLANNER &

UNITIZATION OF SYLLABUS

ACADEMIC YEAR 2022-23

CLASS : I SEMESTER SUBJECT: Statistics

		Subject Title : **Descriptive Statistics**
Week/Month	**Day**	**Portions Planned for 1 hour**
SEPTEMBER 2022 (classes begin from (12/09/2022)	1	Introduction to statistics, definition and scope
	2	Types of data- quantitative, qualitative, nominal, ordinal, cross sectional and time series
	1	Concepts of population, sample, types of sampling: SRS, Systematic, cluster sampling methods.
	2	Types of data –primary and secondary data
	1	Methods to collect primary data, secondary data
	2	Census enumeration and sample survey
OCTOBER 2022	1	Frequency – relative frequency, frequency density
	2	Formation of frequency distribution - discrete
	1	Formation of frequency distribution - continuous
	2	Cumulative frequencies-less than type , more than type
	1	Histogram
	2	Ogives for less than type
	1	Ogives for more than type
	2	Stem and leaf plot
	1	Correlation introduction
	2	Correlation types, measures of correlation
NOVEMBER 2022	1	Scatter diagram
	2	Properties of correlation
	1	Properties of correlation
	2	Karl Pearson's correlation coefficient
	1	Spearman's rank correlation – derivation
	2	Limits for rank correlation coefficient
	1	Probable error , Principle of least squares

	2	Fitting of polynomial equations

Week/Month	Day	Portions Planned for 1 hour
	1	Fitting of exponential curves
	2	Linear regression
DECEMBER 2022	1	Properties of regression
	2	Linear regression lines
	1	Its coefficient of determination
	2	Concept of errors, Principle of least squares,
	1	fitting of polynomial and exponential curves
	2	Simple linear regression and its properties. Linear regression line and coefficient of determination. (Ref. 10)
	1	Simple linear regression and its properties. Linear regression line and coefficient of determination. (Ref. 10)
	2	Simple linear regression and its properties. Linear regression line and coefficient of determination. (Ref. 10)
	1	Illustrative examples on above topics
	2	Illustrative examples on above topics
	1	Illustrative examples on above topics
	2	Illustrative examples on above topics
	1	Illustrative examples on above topics
	2	Revision
JANAUARY 2023	1	Illustrative examples on above topics
	2	
	1	
	2	

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DEPARTMENT OF STATISTICS ACADEMIC PLANNER &

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ACADEMIC YEAR 2022-23
SUBJECT:STATISTICS

CLASS: III SEMESTER TEACHER: R.PRAKASH

		Subject Title : Calculus and Probability Distributions
Week/Month	**Day**	**Portions Planned for 1 hour**
NOVEMBER 2022 (classes begin from (10/11/2022)	1	**Discrete distributions:** Negative Binomial -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
	2	Negative Binomial -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
	1	Negative Binomial -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
	2	Hypergeometric, -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
	1	Hypergeometric, -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
DECEMBER 2022	1	Hypergeometric, -definition through probability mass function, mean, variance, moments, m.g.f., other properties and applications.
	2	Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance.
	1	Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance
	2	Definitions of random sample, parameter and statistic, sampling distribution of sample mean, standard error of sample mean, sampling distribution of sample variance, standard error of sample variance
	1	**Exact sampling distributions**: Chi square distribution- mean, variance, moments, mode, additive property. .
	2	Chi square distribution- mean, variance, moments, mode, additive property.

	1	Student's and Fisher's t-distribution- mean, variance, moments and limiting form of t distribution
	2	Student's and Fisher's t-distribution- mean, variance, moments and limiting form of t distribution
	1	Student's and Fisher's t-distribution- mean, variance, moments and limiting form of t distribution
	2	Snedecor's F-distribution: mean, variance and mode. Distribution of 1/F.
JANAUARY 2023	1	Snedecor's F-distribution: mean, variance and mode. Distribution of 1/F.
	2	**Introduction to simulation**. Generation of random observations from Uniform, Exponential, Normal, Binomial, Poisson distributions
	1	Generation of random observations from Uniform, Exponential, Normal, Binomial, Poisson distributions
	2	Generation of random observations from Uniform, Exponential, Normal, Binomial, Poisson distributions
	1	Applications of basic calculus in Statistics - Review of calculus of one variable, continuity, differentiability, Taylor 's series expansion
	2	Applications of basic calculus in Statistics - Review of calculus of one variable, continuity, differentiability, Taylor 's series expansion
	1	Applications of basic calculus in Statistics - Review of calculus of one variable, continuity, differentiability, Taylor 's series expansion
	2	Functions of several variables, partial derivatives and their application, Jacobians. Integration-introduction, integration by parts, multiple integral and it's evaluation by repeated integration(over rectangles only).
	1	Functions of several variables, partial derivatives and their application, Jacobians. Integration-introduction, integration by parts, multiple integral and it's evaluation by repeated integration(over rectangles only).
	2	Functions of several variables, partial derivatives and their application, Jacobians. Integration-introduction, integration by parts, multiple integral and it's evaluation by repeated integration(over rectangles only).
FEBURARY 2023	1	. Functions of several variables, partial derivatives and their application, Jacobians. Integration-introduction, integration by parts, multiple integral and it's evaluation by repeated integration(over rectangles only).
	2	Sequences and series of real numbers and their convergence, tests

		for the convergence of series (only results and applications).
	1	Sequences and series of real numbers and their convergence, tests for the convergence of series (only results and applications).
	2	Sequences and series of real numbers and their convergence, tests for the convergence of series (only results and applications).
	1	Sequences and series of real numbers and their convergence, tests for the convergence of series (only results and applications).
	2	REVISION
	1	REVISION
	2	REVISION
	1	REVISION
	2	REVISION

CLASS: III SEMESTER TEACHER: SOWMYA SHREE.B.K

		Subject Title : Calculus and Probability Distributions
Week/Month	**Day**	**Portions Planned for 1 hour**
NOVEMBER 2022 (classes begin from (10/11/2022)	1	Introduction on bivariate random variables, joint pmf (discrete case), marginal distribution
	2	Conditional distribution -
	1	Joint pdf, marginal distribution, conditional distribution
	2	Addition theorem of expectation of two random variables for discrete and continuous cases
	1	multiplication theorem of expectation of two random variables
DECEMBER 2022	1	Covariance, correlation and moments
	2	Distribution of functions of random variables using m.g.f
	1	Transformations of variable technique
	2	Transformations of variable technique
	1	Chebyshev's inequality
	2	Chebyshev's inequality- its use in probability
	1	WLLN
	2	Convergence in law
	1	Central limit theorem- De Moivre
	2	Examples on central limit theorem
JANAUARY 2023	1	Continuous distributions: Cauchy, mean, variance, moments, m.g.f., other properties and applications.
	2	Continuous distributions: Cauchy, mean, variance, moments, m.g.f., other properties and applications
	1	Continuous distributions: Cauchy, mean, variance, moments, m.g.f., other properties and applications
	2	Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.

	1	Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.
	2	Weibull– definition through probability density function, mean, variance, moments, m.g.f., other properties and applications.
	1	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution.
	2	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution.
	1	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution
	2	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution
FEBURARY 2023	1	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution
	2	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution
	1	Bivariate normal distribution- definition through probability density function, marginal and conditional distribution
	2	REVISION
	1	REVISION
	2	REVISION
	1	REVISION
	2	REVISION
	1	REVISION
	2	REVISION

DEPARTMENT OF STATISTICS ACADEMIC PLANNER &

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ACADEMIC YEAR 2022-23
SUBJECT:STATISTICS
FIFTH SEMESTER

ST 501: SAMPLING THEORY AND STATISTICAL QUALITY CONTROL

Teacher—R.PRAKASH

Name of the Department	**Statistics**	**Subject Title: Sampling Theory & SQC**
Semester	**V**	**Paper V**
Week/Month & Date (Preferably)	**Day**	**Portions Planned for 1 hour**
NOVEMBER 2022(classes begin from (2/11/2022)	1	Unit 1: Int. To sampling, basic concepts
	2	Unit 2; SRS WR & WOR, basics
	1	UEs of mean
	2	UE of total.
	1	Sampling Vs Complete enumeration
	2	Derivation of sampling variances
DECEMBER-2022	1	Sampling variance continued
	2	Sample size derivation.
	1	Principal steps in a survey.
	2	Advs. & drawbacks of SRS
	1	Unit3: stratified sampling, need
	2	
	1	Sampling and non-sampling errors
	2	Advs. & limitations
	1	UE of population mean
	2	UE of population total

JANUARY-2023	1	
	2	Variance estr. derivation
	1	Var. Estr. derv, continued
	2	Proportional allocation
	1	optimum allocation
	2	Neyman allocation
	1	Comparison & gain in precision
	2	Systematic Sampling
	1	Systematic Sampling
	2	Systematic Sampling
FEBURARY-2023	1	Systematic Sampling
	2	Systematic Sampling
	1	Revision
	2	Revision
	1	Revision
	2	Revision

Teacher: RP

Name of the Department	**STATISTICS**	**Subject Title: Design & analysis of Experiments**
Semester	**V**	**Paper VI**
Week/Month & Date (Preferably)	**Day**	**Portions Planned for 1 hour**
NOVEMBER 2022(classes begin from (2/11/2022)	1	Unit 1-ANOVA : meaning & assumptions.
	1	models
	1	One way ANOVA- basics, model etc.
	1	Analysis- estn. Of parameters
DECEMBER	1	Sum of Squares, MSS, F cal etc..

2022	1	Expectation of trss and ESS

Name of the Department		**Subject Title**

	1	Two-way ANOVA—basics, assumptions
	1	Expectation of trss, BSS
	1	Expectation of ESS, Tukey method etc.
JANAURY-2023	1	Unit 2: Designs- three basic principles
	1	CRD- basics , model and analysis
	1	CRD analysis continue
	1	RBD design: basics, model, analysis
	1	RBD analysis continuation
FEBURARY-2023	1	LSD design: basics, model etc..
	1	LSD analysis continuation
	1	LSD analysis continuation
	1	LSD analysis completion- anova table, inference etc..

TEACHER: SOWMYA SHREE B.K

Semester		**Paper**
Week/Month & Date (Preferably)	**Day**	**Portions Planned for 1 hour**
NOVEMBER 2022(classes begin from (2/11/2022)	1	Unit 4 : Introduction to statistical quality control, it's aims, objectives
	2	chance and assignable causes of variations, process and product control
	3	control charts and construction, action and warning limits
	1	tools of SQC, control limits , interpretation
	2	Mean , range charts ,Standard deviation charts
	3	np charts, p chart
	1	C and U chart
	2	Criteria for detecting lack of control
	3	Tolerance and specification limits
	1	Process capability ratio and interpretation
	2	Chance & assignable causes etc.
	3	Rational subgroups, tools of SQC etc..
DECEMBER-2022	1	NP charts
	2	Linear systematic sampling, basics
	3	Estimation of mean, total
	1	Variance of estimators, circular sys, sampling.
	2	Criteria for lack of control
	3	Tolerance and specification limits
	1	Tolerance and specification limits
	2	Unit5 : product control, basics
	3	Inspection plans- types.
	1	Unit5 : product control, basics
	2	Inspection plans- types.
	3	LTPD. AQL,producers & consumers risks
	1	PCR and its interpretation
	2	Single sampling plan. Derivation of OC and ASN functions

	1	SSP- continued. AOQ and AOQL etc.
	2	Double sampling plan, basics
JAN-2023	1	Revision class
	2	OC of DSP
	3	ASN & AOQ of DSP
	4	Comparison of SSP and DSP plans.

	1	Unit 3 : Efficiencies & missing plots- basics
	2	Efficiency of CRD as compared to RBD
	3	Efficiency of RBD w.r.t. to LSD
	1	Missing plot observation formula derivation in RBD
	2	Missing plot observation formula in LSD
	3	Factorial experiments—basic concepts
	1	Derivation of main effects
	2	Derivation of interaction effects
	3	Orthogonal contrasts in 2 F.E
	1	Orthogonal contrasts in 3 F.E.
	2	Yates method of computing factorial effect totals .
	3	Analysis of 2 F.E.

FEBRUARY 2023	1	Analysis of 3 F.E.
	2	Analysis of 3FE continuation.
	3	Unit 5 : Confounding, need for confounding. Types of

		confounding.

	1	Complete confounding in 2cube FE
	2	Analysis of 2 cube confounding continuation
	3	Partial confounding in 2cube FE
	4	Analysis of partial confounding in 2cube FE continuation
	1	Layouts of 2cube FE and its analysis.
	2	
	3	
	4	