VIJAYA COLLEGE, R V ROAD, BANGALORE – 560 004

DEAPARTMENT OF STATISTICS

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS, 2022 - 23
(EVEN SEMESTER)

2nd SEMESTER, PAPER – 2 (S 201 – PROBABILITY AND DISTRIBUTIONS)
(56 Hours, 4 Credits, 4 Hours of Theory per week)

Month & Year	Session Number	Portions planned for one Hour	TEACHER
MAY-2023	1	Distribution function discrete R.V	R PRAKASH
	2	Distribution function continuous R.V	R PRAKASH
	1	Properties of d.f	R PRAKASH
	2	Properties of d.f	R PRAKASH
	1	Pmf & pdf Properties	R PRAKASH
	2	Expectation of a random	R PRAKASH
	1	variable and algebra of expectations and related results.	R PRAKASH
	2	Expectation of a random	R PRAKASH
	1	variable and algebra of expectations and related results.	R PRAKASH
	2	Moments and moment generating function	R PRAKASH
JUNE-2023	1	Transformation of random variables	R PRAKASH
	2	Discrete uniform, Bernoulli distributions – mean, variance, moments, and MGF	R PRAKASH
	1	Discrete uniform, Bernoulli distributions – mean, variance, moments, and MGF .	R PRAKASH
	2	BINOMIAL distribution – mean, variance, moments, and MGF Recursive relations for moments	R PRAKASH
	1	BINOMIAL distribution – mean, variance, moments, and MGF Recursive relations for moments .	R PRAKASH
	2	POISSON distribution – mean, variance, moments, and MGF Recursive relations for moments	R PRAKASH
	1	POISSON distribution – mean, variance, moments, and MGF Recursive relations for moments	R PRAKASH
	2		R PRAKASH
	1	Negative binomial distributions – mean, variance, moments, and MGF.	R PRAKASH
	2		R PRAKASH
JULY-2023	1	Hyper geometric distribution – mean, variance, moments,	R PRAKASH
	2		R PRAKASH
	1	geometric distribution – mean, variance, moments	R PRAKASH
	2	Uniform distribution – mean, variance, moments, MGF, and properties	R PRAKASH
	1	Gamma distribution – mean, variance, moments, MGF, and properties	R PRAKASH

	2	Gamma distribution – mean, variance, moments, MGF, and properties	R PRAKASH
	1	Beta 1– mean, variance, moments, MGF, and properties	R PRAKASH
	2	Beta 2 distribution– mean, variance, moments, MGF, and properties	R PRAKASH
	1	REVISION	R PRAKASH
	2	REVISION	R PRAKASH
	1	REVISION	R PRAKASH
	2	REVISION	R PRAKASH

PRAVEEN.N.V

Month & Year	Session Number	Portions planned for one Hour	TEACHER
May 2023	1	Introduction to Probability	PRAVEEN.N.V
	2	Deterministic and Stochastic / Random experiment	PRAVEEN.N.V
	1	Various definitions with examples	PRAVEEN.N.V
	2	Different approaches for probability	PRAVEEN.N.V
	1	Different theorems on Probability (Limits, Compliment etc.,)	PRAVEEN.N.V
	2	Problems on probability	PRAVEEN.N.V
	1	Addition theorem of probability	PRAVEEN.N.V
	2	Generalisation of Addition theorem with examples	PRAVEEN.N.V
June 2023	1	Problems on Addition theorem	PRAVEEN.N.V
	2	Problems on Addition theorem continued	PRAVEEN.N.V
	1	Independent events, Multiplication theorem of probability	PRAVEEN.N.V
	2	Total probability theorem, Bayes' Theorem	PRAVEEN.N.V
	1	Problems on Total probability theorem	PRAVEEN.N.V
	2	Problems on Bayes' theorem	PRAVEEN.N.V
	1	Introduction to R software, Installation and other related issues	PRAVEEN.N.V
	2	R as calculator, Basic Mathematical operations	PRAVEEN.N.V
July 2023	1	Evaluation of simple expressions, Hierarchy of operators	PRAVEEN.N.V
	2	Standard Mathematical and Statistical functions with syntax	PRAVEEN.N.V
	1	Creation of vectors using different operators (c, seq, : , ……)	PRAVEEN.N.V
	2	Calculation various statistical measures (Central tendency)	PRAVEEN.N.V
	1	Calculation various statistical measures (Dispersion)	PRAVEEN.N.V
	2	Introduction to plotting function in R	PRAVEEN.N.V
	1	Different parameters, syntax involved in plotting function in R	PRAVEEN.N.V

	2	Bar plot, Pie chart, Histogram, Box plot, Histogram etc	PRAVEEN.N.V
	1	Revision of previous year question papers	PRAVEEN.N.V

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ACADEMIC PLANNER & UNITIZATION OF SYLLABUS, 2022 - 23
(EVEN SEMESTER)

4TH SEMESTER, PAPER – 4 (S 401 – Statistical Inference)
(56 Hours, 4 Credits, 4 Hours of Theory per week)

Month & Year	Session Number	Portions planned for one Hour	Teacher
MAY-2023	1	Introduction to tests of hypotheses: Statistical hypotheses- null and alternative, simple and composite hypotheses.	R PRAKASH
	2	Type-I and Type-II errors, test functions. Randomized and nonrandomized tests..	R PRAKASH
	1	Size, level of significance, power function,	R PRAKASH
	2	power of tests. Critical region.p-value and its interpretation	R PRAKASH
	1	Illustrative examples.	R PRAKASH
	2	Most powerful (MP) test. Statement of Neyman – Pearson lemma	R PRAKASH
	1	Nonparametric tests: Introduction to nonparametric tests	R PRAKASH
	2	Neyman – Pearson lemma and its applications	R PRAKASH
	1	Neyman – Pearson lemma and its applications	R PRAKASH
	2	Large and small sample tests of significance.	R PRAKASH
JUNE-2023	1	Tests for equality of two means,	R PRAKASH

	2	Tests for single variance,	R PRAKASH
	1	Tests for equality of two variances for normal populations.	R PRAKASH
	2	Tests for proportions.	R PRAKASH
	1	**UNIT 2: Point Estimation-II**	R PRAKASH
	2	Fisher information function.	R PRAKASH
	1	Statement of Cramer–Rao inequality and its applications.	R PRAKASH
	2	Minimum Variance Unbiased Estimator and Minimum Variance Bound Estimator.	R PRAKASH
	1	DO	R PRAKASH
	2	DO	R PRAKASH
JULY-2023	1	Maximum likelihood and method of moment estimation;	R PRAKASH
	2	DO	R PRAKASH
	1	DO	R PRAKASH
	2	Properties of MLE and moment estimators and examples. Method of Scoring	R PRAKASH
	1	Revision of Model paper	R PRAKASH
	2	Revision of Previous question papers	R PRAKASH
	1	Revision of Previous question papers	R PRAKASH
	2	Revision of Model paper	R PRAKASH
	1	REVISION	

			R PRAKASH
	2	REVISION	R PRAKASH
	3	REVISION	R PRAKASH
	1	REVISION	R PRAKASH

R PRAKASH

PRAVEEN N V

Month & Year	Session Number	Portions planned for one Hour	Teacher
May 2023	1	Family of distributions, Introduction, definitions	PRAVEEN N V
	2	Location and Scale families of distributions	PRAVEEN N V
	1	Single parameter exponential family (Definition, Introduction)	PRAVEEN N V
	2	Single parameter exponential family (Problems)	PRAVEEN N V
	1	Unbiased estimation (Definition and Introduction)	PRAVEEN N V
	2	Finding unbiased estimators for given PMF/PDF	PRAVEEN N V
	1	Consistency (definition and examples)	PRAVEEN N V
	2	Invariance property of consistent estimators, problems	PRAVEEN N V
June 2023	1	Efficiency and relative efficiency. Mean squared error	PRAVEEN N V
	2	Mean squared error for comparison of estimators	PRAVEEN N V
	1	Sufficient statistics, Definition and Introduction	PRAVEEN N V
	2	Neyman Factorization criterion, Problems	PRAVEEN N V
	1	Interval estimation , Various definitions, underlying distributions	PRAVEEN N V
	2	Method of constructing confidence intervals – pivotal quantity	PRAVEEN N V
	1	Confidence interval for Mean	PRAVEEN N V
	2	Confidence interval for Difference of two Means	PRAVEEN N V
July 2023	1	Confidence interval for Proportion	PRAVEEN N V
	2	Confidence interval for Difference of two Proportions	PRAVEEN N V
	1	Confidence interval for Variance	PRAVEEN N V

	2	Confidence interval for Ratio of two Variances	PRAVEEN N V
	1	Confidence interval for Correlation coefficient (r)	PRAVEEN N V
	2	Revision of Model paper	PRAVEEN N V
	1	Revision of Previous question papers	PRAVEEN N V
	2	Revision of Previous question papers	PRAVEEN N V

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DEAPARTMENT OF STATISTICS

ACADEMIC PLANNER & UNITIZATION OF SYLLABUS, 2022 - 23
(EVEN SEMESTER)
6th SEMESTER, PAPER – 7 (ST 601 – APPLIED STATISTICS)
(39 Hours, 2 Credits, 3 Hours of Theory per week)

Month & Year	Session Number	Portions planned for one Hour	Teacher
APRIL - 2023	1	**Time series analysis**: Introduction to Time -series	**R.Prakash**
	2	Components of time series.	R.Prakash
	3	Additive and multiplicative models. Measurements of trend by moving averages	R.Prakash
	1	Measurements of trend by moving averages and by least squares.	R.Prakash
	3	Measurements of trend by moving averages and by least squares.	R.Prakash
MAY-2023	1	Construction of seasonal indices by simple averages and	R.Prakash
	2	Construction of seasonal indices by ratio to moving averages.	R.Prakash
	3	**Demography:** Sources of demographic data.	R.Prakash
	1	Measurement of mortality: Crude, specific, and standardized death rates. Infant and maternal mortality rates.	R.Prakash
	2	do	R.Prakash
	3	Measurement of fertility: crude, age specific general, and total fertility rates.	R.Prakash
	1	Reproduction rates	R.Prakash
	2	Life table: Components of a life table	R.Prakash
	3	force of mortality, and expectation of life.	R.Prakash
	1	Construction of a life table. Uses of a life table.	R.Prakash
	2	**Index numbers:** Introduction. Price and quantity index numbers.	R.Prakash
	3	Construction of index numbers: Simple and weighted methods..	R.Prakash

JUNE-2023	1	Tests for consistency of index numbers.	R.Prakash
	2	Consumer price index. Problems involved in the construction of general and consumer price index numbers.	R.Prakash
	3	do	R.Prakash
	1	Uses and limitations	R.Prakash
	2	**Clinical trials**: Introduction, trails.	R.Prakash
	3	therapeutic and prophylactic trails.	R.Prakash
	1	Observational, cross sectional, prospective, retrospective, and randomized control studies.	R.Prakash
	2	Odds ratio and its confidence interval. Relative risk and its confidence interval	R.Prakash
	3	Diagnostic efficacy. Application of Bayes theorem. Sensitivity, specificity, false negative and false positive rates.	R.Prakash
	1	do	R.Prakash
	2	Receiver operating characteristic (ROC) curve. Body mass index.	R.Prakash
	3	**Official Statistics and national income**: History of Indian Statistical System.	R.Prakash
	1	Pre and post independence era .	R.Prakash
	2	CSO NSSO and their activities.	R.Prakash
	3	National income. Basic concepts of GNP, GDP, NNP. National Income at factor cost – NDP, per capita income.	R.Prakash
	1	Real national income. Methods of estimating national income. Problems in estimating national income.	R.Prakash
JULY-2023	2	Uses of national income statistics. National accounts statistics of CSO.	R.Prakash
	3	Revision of question papers	R.Prakash
	1	do	R.Prakash
	2		
	3		
	1		
	2		

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(EVEN SEMESTER)

6th SEMESTER B.Sc, PAPER – 8 (ST 603 - OPERATIONS RESEARCH)

(39 Hours, 2 Credits, 3 Hours of Theory per week)

Month & Year	Session Number	Portions planned for one Hour	Teacher
April 2023	1	Introduction to OR, Various Definitions	PRAVEEN N V
	2	Linear Programming Problem, Introduction	PRAVEEN N V
	3	Formulation of LPP	PRAVEEN N V
	1	Graphical method of solving LPP	PRAVEEN N V
	2	Special cases	PRAVEEN N V
	3	Special cases continued	PRAVEEN N V
May 2023	1	Canonical and Standard forms of LPP	PRAVEEN N V
	2	Basic, Basic Feasible, Non degenerate solution.	PRAVEEN N V
	3	Simplex Method – Applicability	PRAVEEN N V
	1	Simplex Algorithm	PRAVEEN N V
	2	Simplex Algorithm (Unique/Multiple/Unbounded/Infeasible)	PRAVEEN N V
	3	Big M Method	PRAVEEN N V
	1	Big M Method continued	PRAVEEN N V
	2	Duality in LPP	PRAVEEN N V
	3	Writing the Dual when Primal is given (special cases)	PRAVEEN N V
	1	Transportation problem (TP), Definition, as an LPP	PRAVEEN N V
	2	IBFS (NWCR, MMM, VAM)	PRAVEEN N V
	3	Test for Optimality (MODI – Modified Distribution Method)	PRAVEEN N V
June 2023	1	Special cases (Unbalancedness and Degeneracy)	PRAVEEN N V
	2	Assignment Problem (AP) Definition, as an LPP	PRAVEEN N V
	3	Complete Enumeration vs Hungarian Method	PRAVEEN N V
	1	Special cases (Unbalanced Assignment problem)	PRAVEEN N V

	2	Game theory, Introduction, Definitions	PRAVEEN N V
	3	Minimax – Maximin Principle - problems	PRAVEEN N V
	1	Dominance Rule - problems	PRAVEEN N V
	2	Mixed Strategy problem, 2 × 2 problem (Without saddle point)	PRAVEEN N V
	3	Graphical method 2 × n problem	PRAVEEN N V
	1	Graphical method m × 2 problem	PRAVEEN N V
	2	Inventory Theory, Introduction, Definitions, types of costs	PRAVEEN N V
	3	EOQ problem without shortages, problems	PRAVEEN N V
	1	EOQ problem with planned shortages, problems	PRAVEEN N V
July 2023	2	Replacement Theory, Introduction, Definitions	PRAVEEN N V
	3	Replacement of items that deteriorate with time (Discrete case)	PRAVEEN N V
	1	Replacement of items that deteriorate with time (Continuous case)	PRAVEEN N V
	2	Group Replacement policy	PRAVEEN N V
	3	Queuing Theory, characteristics of various parameters	PRAVEEN N V
	1	Steady state distribution, M/M/1 Queue (Only statement)	PRAVEEN N V
	2	Waiting time distributions, Little's formula	PRAVEEN N V
	3	Derivation for expected queue length, Expected waiting time	PRAVEEN N V
	1	Derivation for expected system length	PRAVEEN N V
	2	Revision of previous years QPs	PRAVEEN N V
	3	Revision of previous years QPs	PRAVEEN N V