



P.P.N. (P.G.) College, Kanpur

96/12 Mahatma Gandhi Marg, Kanpur - 208001

• Telefax: (0512)2361924 • Website: www.ppncollege.org •

• email: ppncollegekanpur@gmail.com •

UG STATISTICS

COURSE OUTCOMES (COs)

CERTIFICATE IN STATISTICS

FIRST YEAR	SEMESTER - I	Descriptive Statistics (Univariate) and Theory of Probability		CODE: B060101T	THEORY	CREDIT: 04	
		CO 1	Student will have Knowledge of scope and importance of statistics in various fields.				
		CO 2	Student will have knowledge of methods for summarizing and interpreting data sets including common graphical tools such as box plots, histograms and stem plots.				
		CO 3	Student will be able to describe data with measures of central tendency and measures of dispersion and to understand measures of skewness and kurtosis and their utility and significance.				
		CO 4	Student will be able to understand the concept of probability along with basic laws and axioms of probability to solve real life problems.				
		CO 5	Student will be able to understand the terms mutually exclusive and independence and their relevance.				
		CO 6	Student will be able to identify the appropriate method (i.e. union, intersection, conditional, etc.) for solving a problem.				
		Descriptive Data Analysis Lab (Univariate)		CODE: B060102P	PRACTICAL	CREDIT: 02	
	CO 1	Student will have ability to represent/summarise the data/information using appropriate Graphical methods including common graphical tools (such as boxplots, histograms and stemplots) and also to draw inferences from these graphs					
	CO 2	Student will have the knowledge to identify the situation to apply appropriate measure of central tendency as per the nature and need of the data and draw meaningful conclusions regarding behavior of the data.					
	CO 3	Student will have the knowledge to identify the situation to apply appropriate measure of dispersion as per the nature and need of the data and draw meaningful conclusions regarding heterogeneity of the data.					
	CO 4	Student will have ability to measure skewness and kurtosis of data and define their significance.					
	CO 5	Student will acquire the knowledge to compute conditional probabilities based on Bayes Theorem .					
		Descriptive Statistics (Bivariate) and Probability Distributions		CODE: B060201T	THEORY	CREDIT: 04	
	SEMESTER - II	CO 1	Student will have knowledge of the method of least squares for curve fitting to theoretically describe experimental data with a function or equation and to find the parameters associated with the model.				
CO 2		Student will have knowledge of the concepts of correlation and simple linear regression and to interpret results from correlation and regression					
CO 3		Student will have knowledge of discrete distributions like negative binomial, Poisson, etc. with their properties and application of discrete distribution models to solve problems.					
CO 4		Student will have knowledge of continuous distributions i.e. uniform, exponential, normal, etc. with their properties and application of continuous distribution models to solve problems.					
CO 5		Student will have knowledge of the formal definition of order statistics to derive the distribution					



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	function and probability density function of the r^{th} order statistic and joint distribution of r^{th} and s^{th} order statistics.			
Descriptive Data Analysis Lab (Bivariate)		CODE:B060202P	PRACTICAL	CREDIT: 02
CO 1	Student will have ability to deal with the problems based on fitting of curves by Method of least squares e.g. fitting of straight line, second degree polynomial, power curve, exponential curve etc.			
CO 2	Student will have ability to deal with problems based on determination of Regression lines and calculation of Correlation coefficient – grouped and ungrouped data.			
CO 3	Student will have ability to deal with the problems based on determination of Rank correlation.			
CO 4	Student will have ability to fit binomial and poisson distribution for given data.			



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COURSE OUTCOMES (COs)

DIPLOMA IN STATISTICS

SECOND YEAR	SEMESTER - III	Theory of Estimation and Sampling Survey		CODE:B060301T	THEORY	CREDIT: 04	
		CO 1	Student will have knowledge of the concept of Sampling distributions.				
		CO 2	Student will have ability to understand the difference between parameter & statistic and standard error & standard deviation.				
		CO 3	Student will have knowledge of the sampling distribution of the sum and mean.				
		CO 4	Student will have ability to understand the t, f and chi-square distribution and to identify the main characteristics of these distributions.				
		CO 5	Student will have knowledge of the concept of Point and Interval Estimation and discuss characteristics of a good estimator.				
		CO 6	Student will have ability to understand and practice various methods of estimations of parameters.				
		CO 7	Student will have ability to understand the concept of sampling and how it is different from complete enumeration.				
		CO 8	Student will have knowledge of various probability and non-probability sampling methods along with estimates of population parameters.				
		CO 9	Student will have knowledge of sampling and non-sampling errors.				
		CO 10	Student will have knowledge of regression and ratio methods of estimation in simple random sampling(SRS).				
		Sampling Techniques Lab		CODE:B060302P	PRACTICAL	CREDIT: 02	
	CO 1	Student will have ability to draw a simple random sample with the help of table of random numbers.					
	CO 2	Student will have ability to estimate population means and variance in simple random sampling.					
	CO 3	Student will have ability to deal with problems based on Stratified random sampling for population means (proportional and optimum allocation).					
	CO 4	Student will have ability to deal with problems based on Systematic random sampling					
	CO 5	Student will have ability to deal with problems based on two stage sampling					
	CO 6	Student will have ability to deal with problems based on Ratio and regression estimation of population mean and total.					
		Testing of Hypothesis and Applied Statistics		CODE:B060401T	THEORY	CREDIT: 04	
CO 1	Student will have knowledge of the terms like null and alternative hypotheses, two-tailed and one-tailed alternative hypotheses, significant and insignificant, level of significance and confidence, p value etc.						
CO 2	Student will have ability to understand the concept of MP, UMP and UMPU tests.						
CO 3	Student will have ability to understand under what situations one would conduct the small sample and large sample tests (in case of one sample and two sample tests).						
CO 4	Student will have familiarity with different aspects of Applied Statistics and their use in real life situations.						
CO 5	Student will have ability to understand the concept of Time series along with its different components						
CO 6	Student will have knowledge of Index numbers and their applications along with different types of index numbers.						
CO 7	Student will have familiarity with various demographic methods and different measures of mortality and fertility and ability to understand the concept of life table and its construction.						
CO 8	Student will have knowledge to understand the concept of statistical quality control and different control charts for variables and attributes.						
	SEMESTER - IV						



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Tests of Significance and Applied Statistics Lab		CODE:B060402P	PRACTICAL	CREDIT: 02
CO 1	Student will have ability to conduct test of significance based on t – test and Chi-square test.			
CO 2	Student will have knowledge about Fisher's Z-transformation and its use in testing.			
CO 3	Student will have ability to deal with problems based on large sample tests.			
CO 4	Student will have ability to deal with problems based on time series and calculation of its different components for forecasting			
CO 5	Student will have ability to deal with problems based on Index number.			
CO 6	Student will have knowledge about measurement of mortality and fertility.			
CO 7	Student will have ability to deal with problems based on life table.			
CO 8	Student will have ability to work with control charts for variables and attributes and draw inferences.			



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COURSE OUTCOMES (COs)

DEGREE IN STATISTICS

THIRD YEAR	SEMESTER - V	Multivariate Analysis and Non-parametric Methods		CODE: B060501T	THEORY	CREDIT: 04	
		CO 1	Student will have ability to understand the basic concepts of vector space and matrices in order to study multivariate distribution.				
		CO 2	Student will have knowledge of the applications of multivariate normal distribution and Maximum Likelihood estimates of mean vector and dispersion matrix.				
		CO 3	Student will have Knowledge of Principal Component Analysis and Factor Analysis				
		CO 4	Student will have ability to apply distribution free tests (Non-parametric methods) for one and two sample cases.				
		Analysis of Variance and Design of Experiment		CODE: B060502T	THEORY	CREDIT: 04	
		CO 1	Student will have knowledge of the concept of Analysis of Variance (ANOVA).				
		CO 2	Student will have ability to carry out the ANOVA for One way and Two way Classification.				
		CO 3	Student will have ability to carry out the post-hoc analysis.				
		CO 4	Student will have knowledge of the concept of Design of experiment and its basic principles.				
		CO 5	Student will have ability to perform the basic symmetric designs CRD, RBD and LSD with and without missing observations.				
		CO 6	Student will have knowledge of the concept of factorial experiments and their practical applications.				
		Non-parametric Methods and DOE Lab		CODE: B060503P	PRACTICAL	CREDIT: 02	
		CO 1	Student will have ability to conduct test of significance based non-parametric tests.				
CO 2	Student will have ability to deal with multivariate data.						
CO 3	Student will have knowledge of Principal Component Analysis and Factor Analysis. Ability to perform ANOVA for one way and two classification.						
CO 4	Student will have ability to perform post-hoc analysis.						
CO 5	Student will have ability to conduct analysis of CRD, RBD and LSD with and without missing Observations.						
CO 6	Student will have ability to conduct analysis for Factorial experiments (without confounding).						



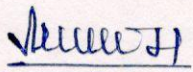
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SEMESTER - VI	Statistical Computing and Introduction to Statistical Software		CODE: B060601T	THEORY	CREDIT:04
	CO 1	Student will have basic Knowledge of SPSS and R programming with some basic notions for developing their own simple programs and visualizing graphics in R.			
	CO 2	Student will have ability to perform data analysis for both univariate and multivariate data sets using R as well as SPSS.			
	Operations Research		CODE: B060602T	THEORY	CREDIT:04
	CO 1	Student will have an idea about the historical background and need of Operations research.			
	CO 2	Student will have an ability to identify and develop operational research models from the verbal description of the real life problems.			
	CO 3	Student will have knowledge of the mathematical tools that are needed to solve optimization problems.			
	CO 4	Student will have ability of solving Linear programming problem, Transportation and Assignment problems, Replacement problems, Job sequencing, etc.			
	CO 5	Student will have an ability to solve the problems based on Game Theory.			
	Operations Research and Statistical Computing Lab		CODE: B060603P	PRACTICAL	CREDIT:02
	CO 1	Student will have knowledge of mathematical formulation of L.P.P			
	CO 2	Student will have ability of solving LPP using different methods.			
	CO 3	Student will have ability to solve Allocation Problem based on Transportation and Assignment model.			
	CO 4	Student will have ability to solve problems based on Game Theory.			
	CO 5	Student will have ability to use programming language R as Calculator.			
	CO 6	Student will have knowledge of using R in simple data analysis.			
	CO 7	Student will be able to perform statistical analysis by using SPSS.			


(Vimal Kumar Jaiswal)

Head
Department of Statistics



Convener
IQAC



Convener
NAAC



Principal